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DEVOTED TO TEXTILE WET-PROCESSING

Annual Processing Review Number

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Golly! I made a rainbow

Yes, Johnny, you made a rainbow. For yourself and for your time and for your place, you made *your* rainbow.

You discovered a funny, three-sided piece of glass held by grubby little fingers and placed in a stream of sunlight would break a warm shaft of light into many, many colors.

Almost three hundred years ago a very wonderful man named Newton told his friends he, also, could make a rainbow. He told about *his* rainbow in a certain way, a scientific way, and out of the telling grew a wonderful accuracy.

Here, Johnny, is where we fit in.

These are some of the results of our work: The fine sharpness, crispy finish and drape of Mom's favorite print dress, the one with a hem that stays the same distance from the floor . . . Dad's suit that welcomes a morning rough-house with you and still looks fresh at the end of the day . . . your windbreaker Mom drops in the washer and then drips dry.

It's important that not one, or even ten, but thousands of dresses and suits be the favorites of Moms and Dads everywhere. And only through spectrum accuracy in Wica's origination of resins and auxiliaries used in scouring, wetting, penetrating, dyeing and finishing can manufacturers constantly improve the quality of goods and decrease the cost. We are proud of the part, Johnny, that we play in your life.

Wica

SPECTRUM ACCURACY

WICA CHEMICALS, INCORPORATED

OLD CONCORD ROAD • CHARLOTTE, NORTH CAROLINA

MANUFACTURER FOR PAINT, PAPER, TEXTILE AND ADHESIVES INDUSTRIES

Annual Processing Review Number

AMERICAN

DYESTUFF REPORTER

Volume 46 | December 2, 1957 | Number 24

Alphabetical List of **NEW PRODUCTS**

Developed Since November, 1956

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WITH the co-operation of manufacturers of dyestuffs textile chemicals, and wet processing and laboratory equipment, we have prepared the accompanying list of products which, it is understood, have been placed on the market or further developed since November, 1956. The list of products has been subdivided according to the classifications mentioned and the individual products are listed in alphabetical order (except for Equipment). The name of the manufacturer, in an abbreviated form, appears directly below the name of the product. In many cases the abbreviated name of the manufacturer will immediately indicate to the reader the full name of the company. However, below we have listed alphabetically the key name of the manufacturer together with the complete firm name and address.

We have tried to make this list as complete and accurate as possible but there may be some unintentional omissions or errors. If so, we shall be pleased to have such matters brought to our attention immediately. We have depended upon the manufacturers to supply us with a complete list of their new products together with information concerning them. The properties claimed for these products are those claimed by the manufacturers. The information which we publish is necessarily in a brief form inasmuch as lack of space prohibits the publication of complete details concerning any product. We hope, however, that the information as it appears is sufficiently comprehensive to give the reader a specific idea of the properties and intended uses of the product.

KEY TO MANUFACTURERS' NAMES

ACETO—Aceto Chemical Co, Inc, 40-40 Lawrence St, Flushing 54, N Y

ALCO—Alco Oil & Chemical Corp, Trenton Ave & William St, Philadelphia 34, Pa

ALLIANCE—The Andover Co, Selling divisions—Alliance Chemical Corp, Newark, N J; Blackman-Uhler, Spartanburg, S C

AMALGAMATED—Amalgamated Chemical Corp, Rorer and Ontario Sts, Philadelphia 34, Pa

AMERICAN ANILINE—American Aniline Products, A Unit of Koppers Co, Inc, Pittsburgh 19, Pa

AMERICAN THIES—American Thies Corp, 1013 West Morehead St, Charlotte 8, N C

ANSBACHER-SIEGLE—Ansbacher-Siegle Corp, Rosebank, Staten Island, N Y

ARKANSAS—Arkansas Co, Inc, P O Box 210, Newark 1, N J

ARNOLD, HOFFMAN—Arnold Hoffman & Co, Inc, 55 Canal St, Providence 1, R I

ATLANTIC—Atlantic Chemical Corp, 153 Prospect St, Passaic, N J

ATLANTIC METALS—Atlantic Powdered Metals, Inc, 38 Park Row, New York 38, N Y

ATLAS COLOR—Atlas Color & Chemical Co, Inc, 60 K St, King Terminal, South Boston 27, Mass

ATLAS ELECTRIC—Atlas Electric Devices Co, Inc, 4114 N Ravenswood Ave, Chicago 13, Ill

BERKSHIRE—Berkshire Color & Chemical Co, Delawanna, N J

BERKSHIRE CORP—Berkshire Color & Chemical Corp, Springfield, Mass

BIRCH—Birch Bros, Inc, 32 Kent St, Somerville 43, Mass
BROWN-ALLEN—Brown-Allen Chemicals, Inc, Box 1, Port Richmond, Staten Island 2, N Y
BRYANT—Bryant Chemical Corp, 6 North St, North Quincy 71, Mass
BURKART-SCHIER—Burkart-Schier Chemical Co, Chattanooga, Tenn
CARBIC-D&H—Carbic Color & Chemical Co, Inc, 451 Washington St, New York 13, N Y: products of Durand & Huguenin, SA, Basle, Switzerland
CARBIC-HOECHST—Carbic Color & Chemical Co, Inc, 451 Washington St, New York 13, N Y: products of Hoechst Chemical Corp, West Warwick, R I and Farbwerke Hoechst AG, Frankfurt, West Germany
CAROLINA—Carolina Aniline & Extract Co, Box 2386, Charlotte 1, N C
CARWIN—The Carwin Co, North Haven, Conn
CIBA—Ciba Co, Inc, 627 Greenwich St, New York 14, N Y
CONCO—Continental Chemical Co, 195 21st Ave, Paterson, N J
COOK—Cook Machine Co, Inc, Jackson St, Nashua, N H
COSA—Cosa Corp, 405 Lexington Ave, New York 17, N Y
CROWN—Crown Chemical Corp, 240 India St, Providence 3, R I
CUSTOM SCIENTIFIC—Custom Scientific Instruments, Inc, 541-543 Devon St, Kearny, N J
CYANAMID—American Cyanamid Co, Bound Brook, N J
DE PAUL—De Paul Chemical Co, Inc, 44-27 Purvis St, Long Island City 1, N Y
DEWEY AND ALMY—Dewey and Almy Chemical Co, Div of W R Grace & Co, Cambridge 40, Mass
DEXTER—Dexter Chemical Corp, 819 Edgewater Rd, New York 59, N Y
DOW CORNING—Dow Corning Corp, Midland, Mich
DuPONT—E I du Pont de Nemours & Co, Inc, Wilmington, Del
EMKAY—Emkay Chemical Co, 319-325 Second St, Elizabeth, N J
EMULSOL—Emulsol Chemical Corp, Div of Witco Chemical Co, 70 East Wacker Drive, Chicago 1, Ill
FOXBORO—The Foxboro Co, Foxboro, Mass
FRITSCHE—Fritsche Brothers, Inc, 76 Ninth Ave, New York 11, N Y
GEIGY—Geigy Dyestuffs Div of Geigy Chemical Corp, Saw Mill River Rd, Ardsley, N Y
GENERAL DYESTUFF—General Aniline & Film Corp, Dyestuff & Chemical Div, 435 Hudson St, New York 14, N Y
GOODRICH—B F Goodrich Chemical Co, 3135 Euclid Ave, Cleveland 15, O
GOODYEAR—Chemical Div, The Goodyear Tire & Rubber Co, Inc, Akron 16, O
HART—The Hart Products Corp, 1440 Broadway, New York 18, N Y
ALFRED HOFMANN—Alfred Hofmann & Co, 629-635 Fifty-ninth St, West New York, N J
HOLLAND—Holland Color & Chemical Co, Holland, Mich
JAMES HUNTER—James Hunter Machine Co, North Adams, Mass
INDEPENDENT—Independent Chemical Corp, 70-30 79th Place, Glendale, Brooklyn 27, N Y
INSTRUMENT—Instrument Development Laboratories, Inc, 67 Mechanic St, Attleboro, Mass
INTERCHEMICAL—Interchemical Corp, Textile Colors Div, Hawthorne, N J
ISOCHEM—Isochem Corp, Providence 9, R I
LUNKENHEIMER—The Lunkenheimer Co, P O Box 360, Cincinnati 14, O
MAC—Mac Chemical Co, P O Box 10001, Knoxville, Tenn
METRO-ATLANTIC—Metro-Atlantic, Inc, Centredale 11, R I
MORETEX—Moretex Chemical Products, Inc, 314 W Henry St, Spartanburg, S C
MORNINGSTAR, NICOL—Morningstar, Nicol, Inc, 630 W 51st St, New York 19, N Y
NATIONAL—National Aniline Division, Allied Chemical & Dye Corp, 40 Rector St, New York 6, N Y
NOPCO—Nopco Chemical Co, Harrison, N J
NYANZA—Nyanza Color & Chemical Co, Inc, 109 Worth St, New York 13, N Y
OLIN MATHIESON—Olin Mathieson Chemical Corp, Mathieson Bldg, Baltimore 3, Md
ONYX—Onyx Oil & Chemical Co, Warren & Morris Sts, Jersey City 2, N J
ORGANIC—Organic Chemical Corp, P O Box 432, Providence 1, R I
PABST—Pabst Brewing Co, Merchandise Mart, Chicago 54, Ill
PEERLESS—Peerless Color Co, Inc, 521-535 North Ave, Plainfield, N J
PENNSALT—Pennsalt Chemicals Corp, Commercial Development Dept, Three Penn Center, Philadelphia 2, Pa
PHARMA—Pharma Chemical Corp, 175 Fifth Ave, New York 10, N Y
PIONEER—Pioneer Chemical Works, Inc, 9th and Thompson Sts, Philadelphia 22, Pa
PITTSBURGH—Pittsburgh Coke & Chemical Co, Grant Bldg, Pittsburgh 19, Pa
POLYMER—Polymer Industries, Inc and Polymer Southern, Inc, P O Box 2184, Greenville, S C
PUTNAM—Putnam Chemical Corp, 153 Waverly Place, New York 14, N Y
RADIANT—Radiant Heat Enterprises, Inc, 630 Morris and Essex Turnpike, Short Hills, N J
REFINED—Refined Products Corp, Lyndhurst, N J
ROHM & HAAS—Rohm & Haas Co, Washington Sq, Philadelphia 5, Pa
SANDOZ—Sandoz, Inc, 61-63 Van Dam St, New York 13, N Y
SEABOARD—Seaboard Chemicals, Inc, 30 Foster St, Salem, Mass
SEMET-SOLVAY—Semet Solvay Petrochemical Division, Allied Chemical & Dye Corp, 40 Rector St, New York 6, N Y
SEYDEL-WOOLLEY—Seydel-Woolley & Co, Box 36, Sta D, Atlanta 18, Ga.
SHELL—Shell Chemical Corp, 50 West 50th St, New York 20, N Y
STALEY—A E Staley Manufacturing Co, Decatur, Ill
STANDARD BRANDS—Standard Brands, Inc, 625 Madison Ave, New York 22, N Y
STEIN, HALL—Stein, Hall & Co, Inc, 285 Madison Ave, New York, N Y
TANATEX—The Tanatex Chemical Corp, Belleville Turnpike, Kearny, N J
TREPLOW—Treplow Products, Inc, 59 Camden St, Paterson, N J
UNION CARBIDE—Union Carbide Chemicals Co, Div of Union Carbide Corp, 30 East 42nd St, New York 17, N Y
U S TESTING—United States Testing Co, Inc, 1415 Park Ave, Hoboken, N J
VERONA—Verona Dyestuffs, Springfield Road, Union, N J
VIKON—Vikon Chemical Co, 1384 Massachusetts Ave, Cambridge 38, Mass
WARWICK—Warwick Chemical Co, a Division of Sun Chemical Corp, Wood River Junction, R I
WHITE—The White Company, 1730 Flatbush Ave, Brooklyn 10, N Y
WICA—Wica Chemicals Inc, P O Box 506, Charlotte, N C

CHEMICALS

ACRYLIC ACID, 30 PERCENT AQUEOUS SOLUTION
(Union Carbide)
CH_2:CHCOOH. M W, 72.07. Chemical properties: can be homopolymerized or copolymerized with most active monomers such as acrylonitrile, styrene, acrylic esters, and vinyl esters; will add compounds with active hydrogens, thus providing a means of introducing the carboxylic acid group. Suggested applications: preparation of homopolymers and copolymers for use as textile sizes and finishes, metal finishes, latex paints, aqueous thickeners, and resin emulsions for floor polishes. Availability: commercial quantities.

ACRYSOL P*-6
(Rohm & Haas)
A liquid emulsion for sizing filament Dacron, applied on conventional equipment with no additives required after neutralization. It has advantages of no scumming during application, with negligible shedding, flaking, or pick-off on the loom. Excellent weaving efficiency has been noted.

*Registered trademark

AEROTEX* RESIN 23
(Cyanamid-Resin)
A heterocyclic, cross-linking agent which permits a great variation of properties to meet requirements for wrinkle recovery, tensile strength, stabilization, soft hand, minimum care properties, durability and resistance to chlorine retention when applied to cellulosic fabrics.

*Trademark

AEROTEX* RESIN 134
(Cyanamid-Resin)
A thermoplastic resin dispersion used to modify the hand of textile finishes. A useful additive to minimum care finishes because it improves the appearance of the fabric after laundering and drying and provides additional resiliency and firmness. Compatible with most melamine, urea and ethylene-urea formaldehyde resins.

*Trademark

AEROTEX* PURIFYING AGENT NO. 1
(Cyanamid-Resin)
Application of this product produces Cyana® Purifiying Finish which reduces body odor formation on certain apparel fabrics. The finish is durable to washing and drycleaning.

*Trademark ®Registered trademark

AEROTEX* ACCELERATOR NO. 5
(Cyanamid-Resin)
A highly efficient metallic salt accelerator which provides curing of melamine, urea and ethylene-urea formaldehyde resins at lower temperatures than other types of accelerators. A clear liquid which is infinitely dilutable with water at room temperature and which is compatible with most textile finishing agents.

*Trademark

AGRAMIN FKLN**
(Verona)
A new binder for piece dyeing which in combination with Acramin** pigments produces shades said to be of very good all-round fastness. Outstanding features are minimum impairment of the luster of the dyed material, solidity of shades due to minimum tendency toward migration during padding process, can be applied with resin finishing in a one-bath operation.

**Registered trademark, Bayer Leverkusen

ALBIGEN A
(Putnam)
Nonionic polymerization product. Stripping assistant for vat, direct, sulfur and naphthol colors on cotton.

ALCOGUM WS
(Alco)
Said to be a new and extremely efficient warp size adjuvant used with starch gums and starch in sizing warps made from natural or synethic fibers. Yarns sized with Alcogum WS, plus a starch gum, are said to have outstanding abrasion resistances. Chemically, it is the sodium salt of a polymerized acrylic resin acid.

ALGEPON #52
(Arkansas)
A dyeing assistant for use in dyeing Orlon with cationic (basic) dyes—produces level dyeings at 190°/200°F, by slowing rate at which these dyes go onto Orlon. Dyeings made using Algepon #52 have been found to possess good resistance to light fading up to 40 hours on the Fade-Ometer. It is readily soluble in water at room temperature and maintains a clear bath throughout the high temperature dyeing operation. Compatible with most nonionic dyebath assistants. Anionic surface active agents should not be present in the dyebath, and must be removed by adequate rinsing if used in the scouring process.

ALGEPON PD
(Arkansas)
A highly efficient discharge printing assistant which is said to be effective on practically all pigments including the difficultly dischargeable phthalocyanine type. It is effective on several of the latter type of pigments which are not discharged satisfactorily by other means. It is incorporated in conventional printing pastes containing gum, hydrosulfite, and other agents commonly used. By means of Algepon PD in such printing pastes, all phthalocyanine pigments are reduced to a clear white sharp pattern within a period of from five to ten minutes in the steam ager. A clear amber liquid, Algepon PD is readily soluble in water at room temperature and is completely compatible with the ingredients used in printing pastes.

"ALKANOL" LBB SURFACE ACTIVE AGENT
(DuPont)
"Alkanol" LBB surface active agent is a cationic product designed for use as a dispersing agent in the application of "Lusane" Brilliant Blue B. In this application, it produces a stable padding solution which results in improved coverage of fabrics.

"ALKANOL" LN SURFACE ACTIVE AGENT
(DuPont)
"Alkanol" LN surface active agent is a liquid product miscible with water in all proportions. Its most outstanding use is in the Du Pont LN Dyeing Process which minimizes the barré problem when acid dyes are applied to nylon filament. "Alkanol" LN is used in the process to complex the anionic acid dye in the bath. At a pH of 3.0 to 3.5 the complex gradually dissociates to form the free anionic dye which is then absorbed by the fiber. "Alkanol" LN does not occupy dye sites within the fiber; therefore, little reserving action occurs even in heavy shades when the recommended amount of "Alkanol" LN is employed. Optimum results are obtained with "Alkanol" LN at temperatures of 200° to 208°F, where the product exhibits considerable superiority over "Duponol" D Paste with respect to barré coverage. "Alkanol" LN, however, offers no advantage over "Duponol" D Paste when temperatures above the boil or pressure equipment are utilized. In addition to good barré coverage at temperatures below the boil, "Alkanol" LN gives fabrics a much softer hand than those dyed in the presence of "Duponol" D Paste.

AMOLINE LUBRICANT CD
(Amalgamated)
A completely water-soluble lubricant for the spinning of wool and worsted yarns having the great advantage of ease of removal during subsequent operations. It is stated that this product eliminates the need for a pre-scour before the dyeing operation, affording the advantage of one-bath scouring and dyeing with the consequent saving of scouring chemicals and time.

AMPITOL PE-30
(Dexter)
A permanent, non-yellowing softener and lubricant for use in resin formulations on wash-and-wear cottons. A nonionic emulsion of polyethylene, the product is said to increase considerably the tear and abrasion strength of wash-and-wear fabrics as well as imparting an excellent hand. Due to the lubricating properties of Ampitol PE-30, cutting and sewing of resin-treated cottons are improved. It is compatible in formulations of urea formaldehyde, melamine formaldehyde or cyclic ureas.

ANTHRAPOLE DC
(Arkansas)
A dye carrier for Dacron developed particularly for use with Dacron/cotton blends. It is said to produce excellent color value on the Dacron and prevent staining of the cotton by the dyes. It also can be used on 100% Dacron with satisfactory results. A clear amber liquid in form, Anthrapole DC produces a milky emulsion when added to water, which is stable throughout the dyeing process and does not cause spots. Anthrapole DC may be used equally efficiently in dyeing both on dyebecks and jigs.

ANTIFOAM B
(Dow Corning)
An effective defoaming agent for use in controlling a wide variety of foaming problems. Antifoam B is supplied as a stable, easily dispersed silicone emulsion. A remarkably small amount of Antifoam B is said to be sufficient to arrest or inhibit the foaming tendency of such systems as dyebaths, sizing solutions and finishing formulations.

ANTI-PERS AL #1
(Carolina)
A permanent type of deodorant as applied to textile fabrics to prevent odors caused by forms of bacteria incubation in the presence of moisture, Anti-Pers AL #1 is a microcrystaline colloid of hexchlorophene and acrylic polymers. It is claimed that, with this product, an electrobiochemical compound, no yellowing of fabric or color change up to 100 hours is discernible by the Fade-Ometer test, which covers the ultra-violet rays and heat stability. Improvement in lightfastness, crocking or bleeding of colors should be noticed. Product storage stability, bath stability, affinity for natural and synthetic fibers, and exhaustion are said to be excellent. It is reportedly soluble in all proportions of cold water. Characteristics: pH, 5; solid content, 46.4; hexachlorophene content, 14%; particle size, approx 1 micron. It can be applied in the last application at not over 100°F, and dried with normal equipment. It may be applied continuously or by the pad method. The use of any silicone compounds impairs the efficiency of this product.

ANTISTAT D-20
(Vikon)
An antistatic agent for application to hydrophobic synthetic fibers as raw stock both when spun alone and in blends. It is usually applied by spraying at the opener and gives a yarn free of greasiness.

ARKO SOFTENER PE
(Arkansas)
A new type non-yellowing softener having marked lubricating properties. It is said to produce a soft, full bodied hand on cotton fabrics with no tendency to yellow even under extreme conditions. It also may be used in connection with thermo-setting resins to improve abrasion resistance and tear strength on cotton and rayon fabrics. A stable white emulsion, Arko Softener PE is readily dispersible in water at room temperature and is stable up to a temperature of 160°F at working concentrations. It is, however, sensitive to acids at the higher range of temperatures.

AROFILM
(Morningstar, Nicol)
A modified form of the Arogum series, said to possess viscosity stability, quick cooking, luster, flexibility and retention of film, but without set-back even when used at high solids—up to 50% solids. Used in textile finishing principally for stiffening, binding, flexibility; produces clear colorless film.

ASTON* 108
(Onyx)
A durable anti-static finish designed for use on a wide variety of synthetic fibers, yarns, and fabrics. Aston 108 brings about the anti-static protection, without adversely affecting color, strength or abrasion resistance. Applied to white, pastel and deeper shaded fabrics, the cloth does not discolor when subjected to normal ironing or laundering, and has been found a suitable lubricant for napping.

*Registered trademark

ASTON* R
(Onyx)
A non-durable anti-stat. It is reported notable for its high efficiency, which is maintained even at low humidities. Supplied as a soft paste; easily soluble in moderately hot water. It is compatible with the general range of thermosetting resins. Easily applicable to wool and silk as well as synthetics.

*Registered trademark

ATCOSOFT XP
(Metro-Atlantic)
A newly developed cationic softener which is recommended for any application where a full round hand is required with a minimum of yellowing, shade change and other injurious side effects. It is said to be particularly effective in thermosetting resin finishing applications.

ATLAPENT T NEW
(Atlas Color)
A nonionic wetting and penetrating agent said to possess fast wetting, low foam, good stability over a wide pH range, and stability to peroxide bleaching. It also is said to have good detergent properties, good rinsibility, and to leave the goods with a soft hand.

"AVITEX" K DURABLE SOFTENER
(Du Pont)
"Avitex" K durable softener was developed particularly for use as a modifier for resin finishes. It contains a nonionic dispersing agent, and, therefore, is compatible with metal salt catalysts such as magnesium chloride and zinc nitrate, as well as amine-type catalysts.

"AVITEX" MLF SOFTENER
(Du Pont)
"Avitex" MLF Softener is essentially similar to "Avitex" ML Softener but is especially designed to give improved whites. It is of particular interest for use on towels and other fabrics where outstanding absorbency is desired.

BANSOFT
(Amalgamated)
A combination of resin copolymers with an amide softener for use as a finish for Banlon. It has the great advantage of laying the fibers down to prevent snagging in addition to yielding a high degree of softness. It is claimed that the resultant hand of the fabric has the soft, cool, moist hand of cashmere.

BASANYL L
(Putnam)
Homogeneous heterocyclic nitrogen compound, slightly basic. Cleaning of equipment in dyehouses and printshops; pasting and dissolving of vats, sulfurs and naphthol AS and disperse dyestuffs for acetate and nylon or Perlon; promoting penetration and levelness in pigment padding and continuous dyeing with vat dyestuffs.

BASF INHIBITOR
(Putnam)
Dyeing and finishing compound to prevent gas fading of acetate dyes.

BASOFIL WW
(Putnam)
Amino condensates. Fixing agent for after-treatment of direct dyes in dyeing and printing.

BASOGAL ON
(Putnam)
Nonionic fatty alcohol derivative. Levelling and penetrating agent in vat, direct and basic dyestuffs. Stripping agent for vat dyeings. Substitute for degumming liquor in dyeing of natural silk.

BASOMOL WS POWDER
(Putnam)
Salt of highly molecular sulfonic acid. Acid stable protective colloid and dyeing assistant.

BASONOL AO POWDER
(Putnam)
Sodium salt of polycarbonic acid. Water softener and sequestering agent.

BASONOL B POWDER
(Putnam)
Sodium salt of polycarbonic acid. Water softener and sequestering agent.

BASONOL NAP
(Putnam)
Ethylenediamine-tetraacetic acid. Sequestering agent.

BASOPAL NA CONC POWDER
(Putnam)
Arylalkyl sulfonate. Synthetic washing & cleansing agent free from fat.

BASOPHOR A-OIL-SOLUBLE
(Putnam)
Oil soluble hydrophilic, nonionogenous ester of a fatty alcohol. Dissolves in mineral oils, aiding in degreasing and removal of oil stains.

BASOPHOR EL
(Putnam)
Fatty acid ester. Emulsifier for animal and vegetable oil, soluble in water. Dispersing agent and dyeing assistant.

BASOPON A
(Putnam)
Condensation product of protein derivatives with fatty acids. Detergent, wetting and emulsifying agent and dyeing assistant.

BASOPON R
(Putnam)
Fatty alcohol sulfonic acid condensation product. Detergent.

BASOSOFT Products
(Putnam)
A range of softening and finishing agents.

BASOTOL
(Putnam)
Aromatic nitro compound. Mild oxidizing agent. Used to prevent facing in printing.

BASOTROPE O
(Putnam)
Dimethylphenylbenzyl ammonium chloride. Discharge assistant in vat color printing and for certain fast color salts and for orange on indigo-dyed ground.

BASOTROPE W
(Putnam)
Sodium salt of disulfonated dimethylphenylbenzyl ammonium chloride. Assistant in discharging certain vat and direct dyes.

BERATEX LD-101
(Berkshire Corp)
A new nonionic surface active agent developed primarily as a medium for effectively and quickly cleaning all color deposits from padder rolls without hand scrubbing. It may be used to remove oil based pigment printing and dyeing emulsions from pad and print rolls. It has no swelling or cracking effect on rubber rollers.

BERKOPON LD-97
(Berkshire Corp)
An effective anionic wetting and penetrating agent for mercerizing baths (both 25° and 35° Baumé). It is a composition of mixed polyalkylene glycol ethers. This product is said to possess excellent wetting properties and will not salt out of the bath.

BICYCLO-2,2,1-HEPTA, 2,5-DIENE
(Shell)
This reactive hydrocarbon adds acids and alcohols directly to the double bonds forming esters and ethers. In this manner reactive intermediates for dyestuffs and polymers can be prepared.

BLACKOUT L
(Burkart-Schier)
Grease, tar and oil remover. Liquid modification of standard Blackout product. Safe scour on all fibers and fabrics. Essentially 100% active.

BLANKOPAN* ACF
(Verona)
A new optical brightening agent for acrylic, polyester, triacetate and acetate fibers producing neutral whites. Outstanding features are said to be excellent stability to peroxide and sodium chlorite bleaching, very good washfastness and stability to heat setting operations.

*Registered trademark, Bayer Leverkusen

BLEACHIT 1
(Putnam)
Sodium salt of dithionic acid. Bleaching of all fibers.

BLEACHIT 1A
(Putnam)
Stabilized sodium dithionite with fluorescent substance. Bleaching of all fibers.

BONDREZ 622
(Stein, Hall)
Synthetic resin dispersion. Metallic pigment water phase binder; can be used in conjunction with vats, leuco vat, esters, and pigment colors.

BONDREZ 623
(Stein, Hall)
Synthetic resin dispersion. Metallic pigment water phase binder; can be used in conjunction with vats, leuco vat, esters and pigment colors.

BONDREZ 628-M
(Stein, Hall)
Synthetic resin dispersion. White pigment discharge and over-print printing binder; can be schreiner calendered.

BONDREZ 735-M
(Stein, Hall)
Synthetic resin dispersion. Metallic pigment water phase binder for use on fiber glass.

BRYPEL
(Bryant)
A concentrated one-bath semidurable water repellent. Extremely fine particle size. It is said to give excellent penetration and a more uniform finish. A liquid which is very readily prepared for use, and an emulsion that is completely stable.

BRYSEC
(Bryant)
A hydrophobic resin which will impart a permanent water-repellent finish. Useful in conjunction with synthetic resins for wash and wear finishes.

BURFIX LG
(Burkart-Schier)
Fixing agent for naphthol-dyed goods as well as other dyeings which present crocking problem. A non-staining latex emulsion, it is said to impart durable crock resistance—excellent against wet crocking and good against dry crocking. No adverse effect on hand or other properties of fabric.

CALCIUM TRIMETHYLOLPHENATE
(Union Carbide)
$(CH_2OH)_3C_6H_2 - O - Ca - O - C_6H_2(CH_2OH)_3$. Calcium 2,4,6-tris(hydroxymethyl) phenate. A buff colored powder. Neutral equivalent, 209-212; Sp G, 1.414 at 20/20°C; MP, above 300°C; sol in water, complete at 20°C; sol in organic solvents at 25°C; methanol, above 40%; ethylene glycol, above 20%; ethanol, 1.4%; 1-propanol, 0.2%. Chemical properties: reacts with acids liberating free 2,4,6-trimethylolphenol; with alkyl sulfates or active chlorine compounds to form trimethlol-phenyl ethers and tetraethers; with acid chlorides or anhydrides to yield trimethylolphenyl esters and tetraesters. Suggested applications: Useful in itself or through trimethylolphenol as a raw material for thermosetting resins by reaction with glycols, polyols, polyamines, sugars and other polyfunctional compounds; insolubilizing agent for starches, sugars, glucosides, glues, gelatins, polyvinyl alcohol, hydroxyethyl cellulose and other water-soluble materials; cross-linking agent and intermediate for epoxy, polyester and polyurethane resins; wet-strengthening agent for paper; binder for powders or granular materials. Availability: semi-commercial quantities.

CARBANONE A
(Hart)
An anionic-nonionic detergent in gel form, high active content, showing high resistance to acid and alkali. Recommended for kier boiling, carbonizing, and general scouring of cellulosic and synthetic fibers.

CAROLID ®
(Tanatex)
Carolid is a new, non-toxic, non-solvent carrier for dyeing Dacron[1] and Dacron-blends as well as other man-made fibers such as Arnel[2], Darlan[3], Dynel[4], Verel[5], etc. It is extremely easy to apply in a simple, single-step dyeing procedure that speeds production and cuts dyeing costs and is said to make difficult carrier dyeing as easy as ordinary dyeing.

Unlike most carriers, Carolid is said to go into true solution and from it, is exhausted onto the goods. As a result, spotting is said to be completely eliminated and extremely level dyeings are obtained—even on 100% filament goods. In addition, it provides extraordinarily good color yields—in most cases, as high as 25% better than existing carriers.

1. T M. E I du Pont de Nemours & Co, Inc
2. T M. Celanese Corp of America
3. T M. B F Goodrich Chemical Co
4. T M. Union Carbide Chemicals Co
5. T M. Tennessee Eastman Co

CATALYST #999
(Bryant)
A combined organic and inorganic catalyst which is said to impart maximum fixation with a minimum tendering action. Of particular advantage in chlorine resistant finishes.

CETOSOL K
(Stein, Hall)
Synthetic resin. Rug backsize.

CHEMIGUM LATEX 247:
(Goodyear)
A medium acrylonitrile latex developed to give improved resistance to discoloration on heat and light exposure. It contains an emulsification system which is said to impart excellent mechanical and ion stability. Chemigum Latex 247 can be used in an uncured form and contains an efficient antioxidant which provides protection against the effects of long term aging. The excellent adhesion and fiber binding properties of the new latex suggests its use in textile inks, non-woven fabrics, textile backcoating and sizings, leather finishes, pigmented paper coatings and carpet backing.

CHLORDARE*
(Metro-Atlantic)
A newly developed thermosetting resin which is said to produce extremely durable crease resistant, shrink resistant effects in cellulosic fabrics with no fiber degradation due to chlorine retention. All finishes produced with Chlordare are extremely resistant to yellowing.

*Trademark. Pat Pending

CONCO NON-SLIP #10
(Conco)
A nylon fiber binding agent on woven fabrics, which does not affect hand or add any firmness.

CONCOSET 600
(Conco)
A blend of modified urea resins designed to give nylons fullness, firmness and flame-proofing.

CONCO SOFTENER PC
(Conco)
A nonionic softener for all fabrics and fibers to add fullness, lubricity, and to prevent needle burns.

CONCO WEIGHTER WN
(Conco)
A weighter for nylons to add weight and some body without firmness.

CULOFIX WFD
(Arkansas)
A highly efficient fixative for use as an after-treatment to improve fastness of direct dyes to laundering. It is also recommended by the manufacturers for use in conjunction with silicone water repellents and thermosetting resins for improving color fastness in finishing. Culofix WFD does not adversely effect the water repellency rating produced by Hydro-Pruf and other silicone water repellents. A soft, off-white paste consisting of a cationic resin precondensate, it is recommended that it be pre-mixed in hot water before adding to the bath. Copper acetate may be used with Culofix WFD in applications where light fastness is of primary importance, and where in some cases it is desirable to obtain a higher degree of wash fastness than with Culofix WFD alone.

2-CYANOETHYL ACRYLATE
(Union Carbide)
$CH_2{=}CHCOOCH_2CH_2CN$. M W, 125.12 B P, 103°C at 10 mm; Sp g, 1.062 at 20/20°C. Chemical properties: will homopolymerize, or copolymerize with acrylonitrile, styrene, acrylic esters, and vinyl esters; will add to compounds with active hydrogens, thus providing a means of introducing the cyanoethyl group which can be hydrolyzed to the carboxylic acid or hydrogenated to the amine. Suggested uses: preparation of synthetic resins, fibers, and pharmaceuticals. Availability: research quantities.

DAREX EVERFLEX 26980
(Dewey and Almy)
The first of the "Q" process copolymers to go into commercial production. With the "Q" process, a new method of polymerization, vinyl acetate polymers and copolymers are manufactured without emulsifiers thus reducing water sensitivity problems.

DAREX EVERFLEX 2897G and 2898G
(Dewey and Almy)
Darex micro particle Everflexes are unique copolymers of vinyl acetate. A blend of monomers is copolymerized with vinyl acetate to yield a copolymer which has permanent flexibility. The two grades are similar. The 2898G brand forms a softer, more flexible film than the 2897G brand and is said to be the equivalent of a more highly plasticized polyvinyl acetate.

iso-DECYL AMINE
(Union Carbide)
A light colored liquid which is a mixture of decylamine isomers. $C_{10}H_{23}N$. M W, 157.30; Sp G, 0.8040 at 20/20°C; B P, 203.7°C (760 mm), 115°C (50 mm), 78°C (10 mm); V P. 0.27 mm. at 20°C, R I (n_D^{25}) 1.4399 at 20°C; sol in water at 20°C, 0.05% by weight. Flash Point, (open cup), 190°F. Suggested uses: intermediate for the preparation of corrosion inhibitors, petroluem specialties, rubber chemicals, insecticides, pharmaceuticals, surfactants and dyestuffs. Availability: research quantities.

DEFOAMER 711
(Isochem)
At nonionic, nonsilicone defoamer claimed to possess exceptional solubility and stability.

DEFOAMER 333S
(Isochem)
A nonionic silicone fortified defoamer said to possess exceptional solubility and stability.

DEFOAMER H-611
(Pioneer)
A liquid defoaming agent, 100% active, self-emulsifying. Recommended for the control of foam in textile finishes, sizes, adhesives, latices, and other compositions which have a tendency to foam.

DEFOAMER LD-95
(Berkshire Corp)
This is a new silicone defoamer developed especially for vat and sulfur dyestuffs. Only small amounts of this material, ie, from .02% to .05% are said to be required to achieve excellent defoaming. This is a nonionic product.

DELUSTERING PASTE #3, #4
(Stein, Hall)
Suspension of TiO_2. Delustering agent for rayon and acetate.

DEPCO* MIN
(De Paul)
A general purpose solvent-scour primarily used for synthetic fibers in enclosed dyeing machines. Because of its nature, scouring and dyeing is run in the same operation. Depco MIN is also effectively used in the dye box.

*Registered trademark

DEPCO* SET Z
(De Paul)
A cyclic monomeric urea-formaldehyde resin. This resin is used for shrinkage control on cotton and rayon fabrics. It is also used for fabric glazing as residual pleating resin and in wash-and-wear formulations. In addition Depco Set Z exhibits low chlorine retention characteristics.

*Registered trademark

DERGOPAL EM
(Arkansas)
A whitening agent of outstanding properties for use on Dacron, cotton and rayon. It is said to produce a brilliant blue-white cast which is unique among optical bleaching agents. It is also applicable to nylon, Darlan, acetate and Arnel, and on these fibers also produces a pure blue-white cast. Dergopal EM is said to be resistant to all bleaching agents including sodium chlorite and, also, to acids and alkalis. Furthermore, it has a good degree of light fastness. A white paste in consistency, Dergopal EM dissolves readily in warm water. For application, it is essential that Dergopal EM be used at a temperature range of 180°/200°F for optimum results.

DERGOPAL ST
(Arkansas)
A whitening agent of outstanding heat resistance for use on nylon—is not effected by the temperatures used in setting nylon. It also overcomes the tendency of nylon itself to yellow at setting temperatures. Easy to use, Dergopal ST is readily soluble in water at room temperature, and is said to produce an excellent white on nylon when applied either before or after setting. It is compatible with most anionic and nonionic surfactants and softeners, but should not be used with cationic agents.

DEXENE* CS-15
(Dexter)
A low-cost substantive softener for use with all fibers, either as a self-softener or in resin finishes. A cationic-nonionic agent, Dexene CS-15 may be used either on the alkaline or acid side and is claimed to be compatible with a wide variety of thermo-setting and thermo-plastic resins. Because of its even rate of exhaustion, it is said to insure uniform softness throughout the package or beam in pressure machines. It is recommended as a napping assistant and a fiber lubricant for high-speed sewing and cutting.

DIALLYLAMINE
(Shell)
Enters into reactions typical of secondary amines and offers the additional reactivity of its two double bonds.

It is useful in the preparation of pharmaceuticals, agricultural chemicals and rubber chemicals.

Diallylamine will readily form amides, imides, carbamates, etc with suitable reagents. In addition, the double bonds may be utilized for copolymerization with other monomers, or a variety of additional products may be made.

1,3-DIAMINO PROPANE
(Union Carbide)
$H_2NCH_2CH_2CH_2NH_2$. A water-white liquid. M W, 74.13; B P, 138°C (735 mm) and 67°C (50mm); Sp G, 0.884 at 25/4°C; R I (n_D), 1,4600 at 20°C; completely soluble in water, methanol and ethyl ether. Chemical properties: undergoes reactions typical of primary amines. Suggested uses: intermediate in the production of textile resins, ion exchange resins, dyestuffs, rubber chemicals, pharmaceuticals, surface active agents, corrosion inhibitors and insecticides. Availability: semi-commercial quantities.

DIASTAFOR® LCD DESIZING AGENT
(Standard Brands)
A new, improved, more concentrated, thermostable desizing agent. It is in easily-diluted liquid form and has all the advantages of time-proven Diastafor. In addition, the use of Diastafor LCD is said to mean savings in storage and handling costs for dependable troublefree desizing.

®Registered U S Pat Office

DIPROPYL AMINE
(Union Carbide)
$(CH_3CH_2CH_2)_2NH$. M W, 101.19; Sp G, 0.7410 at 20/20°C; B P, 110.7°C (760 mm); Fr P, -39.6 C; R I (n_D), 1,4050 at 20°C; surface tension, 22.8 dynes/cm at 20°C; completely soluble in ethyl ether and methanol at 25°C. Suggested uses: a secondary amine of interest as an intermediate for rubber chemicals, emulsifiers, herbicides, pharmaceuticals, dyestuffs, and textile finishing agents. Availability: semi-commercial quantities.

DISCHARGING AGENT H
(Putnam)
Calcium salt of oxymethane sulfide acid. Discharging agent for use with selected Lumatex pigment colors and suitable disperse dyestuffs.

DISPERSING AGENT NFL
(Mac)
A dispersing agent used for pasting-up dyestuffs and also in the dyebath—using ¼ of 1% in each operation to insure level dyeing and reduce streaks and uneveness. It can be used on all types of dyeings and dyestuffs.

DISPERSION PASTE 346
(Stein, Hall)
Dispersion of white pigments. White pigment printing.

DISSOLVING SALT B
(Putnam)
Salt of an aromatic sulfonic acid. Solvent and fixing auxiliary for dyestuffs.

DIVINYL SULFONE
(Union Carbide)
$CH_2{:}CHSO_2CH{:}CH_2$. M W, 118.16, Sp G, 1.1788 at 20/20°C, B P, 234.4°C (760 mm); Fr P, −26.2°C; sol in water, 11.5% by wt; sol of water in, 8.8% by wt. Chemical properties: will add to compounds with active hydrogens; will form long chain polymers with diols, di-amines, urea, and malonic esters; will copolymerize with acrylonitrile, styrene, and acrylic esters. Suggested uses: preparation of addition polymers; modification of polyester resins; co-monomer in synthetic fibers to improve dyeing characteristics; cross-linking of cottons and rayons to impart shrink-resistance. Availability: research quantities.

DOW CORNING T-5167
(Dow Corning)
A stable, water dilutable emulsion containing 30% silicone, T-5167 is an effective finish for deep synthetic fur pile fabrics. The emulsion bath is suitable for either spray or padding applications and can be cured at relatively low-drying temperatures. Properly applied and processed, T-5167 is said to offer durable water repellency, and exceptionally smooth handle and some increase in gloss.

DURENE (1,2,4,5-tetramethyl benzene)
(Shell)
Durene is a starting point in the manufacture of highly reactive intermediates which could be converted into dyestuffs and polymers. One of these intermediates is bis (chloromethyl) durene which has reactivity comparable to that of an acid chloride.

All of these derivatives are characterized by high melting points and limited solubility.

ECLIPSE* CG STARCH
(Staley)
Another thin-boiling starch in grit form is added to Staley's line. Eclipse CG is of medium fluidity.

*Registered trademark

EDOLAN* FLE
(Verona)
A new permanent protective agent for animal fibers against moths and beetles which, besides good solubility, is said to possess excellent fastness to processing, weaving, repeated washing and dry cleaning operations or shrink-proofing treatments. Fabrics treated with this product do not discolor on exposure to light.

*Registered trademark, Bayer Leverkusen

EK-1261
(Morningstar, Nicol)
Polyvinyl acetate emulsion, specially designed for minimized build up of deposit on drying cylinders and processing equipment. Produces typical PVAc film with fullness, body and stiffening. Compatible with tallow softeners and other commonly used finishing compounds of anionic and nonionic type.

EMCOL 4155
(Emulsol)
A fatty amide sulfonate for use as a dispersant and wetting agent. It is tolerant to electrolytes.

EMCOL 5100
(Emulsol)
An alkylolamide for use as a nonionic dispersant and detergent.

EMCOL 5120
(Emulsol)
An alkylolamide for use as an oil-soluble nonionic detergent dispersant.

EMCOL 5130
(Emulsol)
An alkylolamide for use as a nonionic detergent dispersant.

EMCOL 5138
(Emulsol)
An alkylolamide for use as an oil-soluble nonionic detergent dispersant.

EMCOL C67-2
(Emulsol)
A blended anionic surfactant for use as a dispersant and wetting agent. It is tolerant to electrolytes.

EMCOL C67-4
(Emulsol)
A blended anionic surfactant for use as a dispersant and wetting agent. It is tolerant to electrolytes.

EMCOL P10-59
(Emulsol)
An alkyl aryl sulfonate for use as a dispersant and wetting agent. It is tolerant to electrolytes.

EMKAFIX 20
(Emkay)
A popular resin dye fixing agent, which has shown itself to be very economical on a money value basis. It is very resistant to the presence of Glauber's Salt and similar materials. Useful for turquoise shades.

EMKAFUME S
(Emkay)
An inexpensive gas-fading inhibitor for acetate colors. Used in the finishing operation to give maximum protection. In many cases, peak performance is obtained by use of a permanent type such as Emkacide GFI-40 in the dye bath, and Emkafume S in the finish.

EMKALANE ACW
(Emkay)
A leveling agent used in the dyeing of Acrilan-wool blends. It helps in obtaining a good transfer of dyestuffs from the wool to the Acrilan. It promotes a more stable dye bath when used with many neutral pre-metallized colors. It helps obtain better exhaustion of the dye bath and gives colloidal protection during the dyeing operation.

EMKALAR 29
(Emkay)
A carrier which promotes the faster dyeing of Dacron*. It is very effective and creates a good depth in a minimum of dyeing time. By its use, it offers a complete range of shades without the use of special equipment.

*DuPont Fiber

EMKALON PF
An economical and popular strength anionic substantive softener. It produces smoothness, lubrication and luster, and is said to offer excellent resistance to yellowing and odor formation.

EMKAPON BR
(Emkay)
A special scouring agent and leveller, selectively designed for use in chenille processing.

EMKAPON CT
(Emkay)
A unique, balanced detergent with many nonionic and anionic properties. It is claimed to be an excellent emulsifier, cleaner and wetting agent and an effective, economical scouring and dyeing assistant for textile fibers in skein, package and fabric.

EMKASENE
(Emkay)
A new type organic sequestering and chelating agent. It is very useful in wet processing operations where problems caused by hard water and trace metal conditions are found. It is stable in storage, and effective over a wide range of temperature and pH.

EMKASTAT NS
(Emkay)
An auxiliary designed to meet the problems present in the processing of synthetics. An anti-static agent suggested for use where soiling or soil carrying must be kept to a minimum.

EMKATEX LS
(Emkay)
A new leveling agent for pre-metallized and acetate dyes. A versatile dye dispersant. It is said to have excellent resistance to salts, acids and alkalies and aids in obtaining good retarding and stripping action.

2,3-EPOXY-2-ETHYLHEXANOL
(Union Carbide)
$C_8H_{16}O_2$. M W, 144.22; Sp G, 0.9517 at 20/20°C; B P, 131°C (50 mm) and 96°C (10 mm); V P, 0.074 mm at 20°C, Fr Pt, sets to glass below −65°C; Sol in water, 0.82% by wt at 20°C; Sol of water in, 10.5% by wt at 20°C; Visc, 10.5 cps at 20°C; R I (n_D), 1,4422 at 20°C. Chemical properties; epoxy ring can be opened by usual reactions; hydrolysis yields the triol derivative; hydroxyl groups can be esterified. Suggested uses: intermediate for plasticizers and resins. Availability: research quantities.

ESTRANOL CP
(Crown)
An alkyl polyphosphate surfactant. Stable to both acids and alkalies. Recommended for kier boiling, scouring and as a general purpose wetting agent.

ETHYLEX GUMS
(Staley)
Hydroxy ethyl ether derivatives of corn starch with properties quite different from native corn starch. Available as special finishing gums, as well as in 2 regular series in a complete range of viscosities. They are used in finishing for their film clarity and flexibility and for their compatibility with resins. Of particular interest is Ethylex 2020 Gum, an entirely new gum said to be of lower viscosity than any others of this type.

ETHYLSULFONYLETHANOL, $CH_2CH_2SO_2CH_2CH_2OH$
(Pennsalt)
An antistatic agent and humectant having an exceptionally low degree of toxicity (LD/50 (rats) = 18 grams/kilo). Very soluble in water. Particularly effective as an antistatic agent on acrylic, polyester and vinylic fibers.

EVENATE 40
(Amalgamated)
One bath scouring and dyeing agent for nylon, said to yield excellent unions and full depth of shade. This product is a "one-package" product eliminating the need for several chemicals with resultant elimination of waste.

EXSIZE-T*
(Pabst)
Exsize-T desizing agent is now available in the dry, as well as liquid, state. Packed 24 8-oz cans to the case, each can is the equivalent of 8 lbs of liquid, being 16 times as potent. Where freight charges are high and storage space is at a premium, dry Exsize-T affords advantages over the liquids.

*Registered trademark

FIBACON F-00
(Burkart-Schier)
New liquid substantive softener—100% active. Imparts pleasing hand to practically all fibers and fabrics. Compatible with finishing agents including resins. Non-yellowing. May be easily diluted with water to provide low-cost stock solution softener—or may be entered to bath as is.

FLAME RETARDANT BASF
(Putnam)
Phosphate and ammonia compound. Fire resistant.

FLAMEPEL K
(Bryant)
A flame retardant that will not materially change the hand of the fabric, deluster the fiber or change the shade.

FYRAN BP
(Crown)
An inorganic colorless liquid resin. For flame proofing all types of cellulosic fabrics.

GERMOCID
(Putnam)
Surface active, quaternary ammonium compound. Preservative and disinfectant, with wetting and rewetting properties.

GLISOLA S
(Isochem)
A polyglycol ester humectant, plasticizer, lubricant, conditioner and glycerine replacement. Said to be of high solids (90%), high viscosity, high density, to contain no fats or oils and to have low volatility compatible with all types finishes, sizes and printing pastes: non crystallizing. Antistat properties on worsted and new synthetics.

GLYCINAL HD2
(Putnam)
Oxethylation product. Solvent and fixing agent in printing vat dyes.

HALLTEX B
(Stein, Hall)
Sodium alginate. Print paste thickener.

HARTEX RETARDERS A & C
(Hart)
Cationic agents for retarding the action of cationic dyes on Orlon fiber. Allows the dyer to achieve level pastel and medium shades.

HARTEX SOFTENER DW
(Hart)
A 100% active liquid cationic softener said to have easy solubility and outstanding resistance to yellowing. It gives a desirable soft hand and shows excellent compatibility with many finishing materials. Recommended for finishing of yarns and fabrics and for inclusion in resin-treating baths.

HARTEXADE #2347
(Hart)
A hosiery dyeing assistant for one-operation scouring and leveling. It is stated that it is readily rinsable, prevents over-dyeing and results in good shade balance throughout the stocking.

HARTORESIN S-50
(Hart)
A stable, concentrated, prepolymerized urea-formaldehyde resin which is said to produce a stiff hand and excellent stabilization of goods. It is recommended for treatment of cottons, rayons and acetates, for stiffening nylon laces and nets, and as an additive to soft resin finishes.

HARTOSET F-60
(Hart)
A modified urea-formaldehyde resin syrup for stiff, flame-retardant finishes on nylon laces and nets.

HYCAR 2601
(Goodrich)
A polyacrylate latex. Sizing agent; modifier for urea and melamine-formaldehyde resin; pigment binder; sunlight resistant coatings; prepared with nonionic emulsifier.

N-HYDROXYETHYL PIPERAZINE
(Union Carbide)
$HOCH_2CH_2NCH_2CH_2NHCH_2CH_2$. A light colored liquid with a typical amine odor. M W, 130.19; B P, 246.3°C (760 mm); Sp G, 1.0614 at 20/20°C, V P, 0.005 mm at 20°C; Fr P, sets to glass below −10°C; Sol in water, complete; Sol of water in, complete. Chemical properties: combines three different reactive groups (secondary amine, tertiary amine and hydroxyl) in a low molecular weight molecule. Reacts with fatty acids to give surface active products capable of being modified at the nitrogen group. Dehydration yields N-Vinyl Piperazine. Suggested uses: tranquilizing drugs, antihistamines, anthelmintics, dyestuffs, detergents, rubber chemicals, and monomers. Availability: semi-commercial quantities.

IMINO-bis-PROPYL AMINE
(Union Carbide)
$HN-(CH_2CH_2CH_2NH_2)_2$. A water-white liquid. M W, 131.22; B P, 232°C (760 mm) and 113°C (10 mm); Sp G, .9307 at 20/20°C; R I, 1.4802 at 20°C; completely soluble in water and common polar organic solvents. Chemical properties: undergoes reactions typical of secondary amines. Suggested uses: intermediate in the preparation of textile and paper treating resins, dyestuffs, insecticides, rubber chemicals, pharmaceuticals, ion exchange resins and surface active agents. Availability: semi-commercial quantities.

IMPREGNOLE* SPX-3
(Warwick)
A new single package nondurable type of water repellent which is applicable to cotton and cellulosic materials. In addition to producing water repellency, it imparts dye bleed resistance.

*Trademark-registered

ISOCHEM WAX 140
(Isochem)
A powdered 100% wax for use as a starch lubricant; readily soluble in starch cooks.

ISOCHEM WAX SIL
(Isochem)
Hot melt nylon thread finish fortified with silicones and antistats; said to have a light color and to possess stability under heat.

ISOCHEM WAX SLH
(Isochem)
Solid wax in block form as starch lubricant or hot melt application on slasher; contains no mineral waxes; readily self soluble; light color; smooth dispersions.

ISOGEL 400
(Isochem)
400-gram technical gelatine of high quality; said to be odor free, foam free and of exceptional light color.

ISOGEL NF
(Isochem)
Soluble caseinate narrow fabric finish and binder said to have excellent flexibility and to be a color dye leveler, starch binder and nylon size.

ISOGUM R
(Isochem)
Tapioca gum said to possess exceptionally light color, a neutral pH, transparent film, best color available, good flexibility.

ISOLUBE S
(Isochem)
Worsted lubricant to replace oils. Based on polyglycol ester, it is said to give positive lubrication, to condition, and to eliminate static. Contains no oils.

ISOMUL U
(Isochem)
Self-soluble solvent detergent for scouring rayons, worsteds—and all types of textiles.

ISONOSTAT III
(Isochem)
Antistat concentrate based on modified polyethyleneglycol oleate. Self emulsifying for neat use as coning or spray oil or in emulsions. Suitable for Dacron, Orlon and nylon. Suitable for package, pad or dyebeck application.

ISOPENT DEF
(Isochem)
Non-foaming penetrant; nonionic high activity is said to actually reduce foam and improve scouring. Especially adapted for high pressure package dyeing, high speed dyeing, and continuous bleaching ranges.

ISOPLAST OIL WS
(Isochem)
A glycol polyester of bleached castor oil. It is stated that it has an exceptional light color, is an excellent plasticizer, is non volatile, and yields luster and transparency to finishes. Will not discolor or darken. It is said to be an excellent humectant, film former and superior pigment carrier for printing pastes and padding operations.

ISOREZ 42-11
(Isochem)
Polyvinyl alcohol type binder for starch, a nylon and Dacron size and finish.

ISOTERGE
(Isochem)
Cocoanut oil amide type detergent type. Claimed to possess exceptional stability to high temperatures and pressures; has high concentration and strength.

J T G GUM
(Morningstar, Nicol)
Worsted warp sizing compound.

KAURIT BU
(Putnam)
Imparting crease resistance and stiffening to cellulose materials with very good fastness to washing.

"LATYL" CARRIER A
(Du Pont)

"Latyl" Carrier A is specifically produced as an assistant for increasing the dyeability of "Dacron" polyester fiber and is designed to eliminate many of the problems associated with carrier dyeing of "Dacron". "Latyl" Carrier A is odorless; believed nontoxic; useful in neutral, acid or alkaline baths (pH range of 2 to 11; "Latyl" Carrier A gives a neutral dyebath when used alone); a solid even at 212°F. (Since it does not melt in the dyebath, emulsion problems are nonexistent).

It is stated that "Latyl" Carrier A does not affect lightfastness of dyes on "Dacron" nor does it cause degradation of other fibers (wool, cotton, rayon and nylon) present in blends. It has no effect on simultaneous or subsequent dyeing of such fibers by usual methods. "Latyl" Carrier A is a fine powder that can be readily pasted with either hot or cold water without the addition of a wetting or dispersing agent. The dry powder can be added directly to the dyebath and is generally used at a concentration of 5.0 g/l. "Latyl" Carrier A shows excellent activity at the boil, but is considerably less effective at 200°F.

LEVEGAL* PT
(Verona)

A new liquid nontoxic carrier for dyeing polyester and triacetate fibers or blends thereof at normal temperatures in conventional equipment. It is said to disperse readily in the dye bath; require no change in dyeing procedure and to be effective throughout dyeing cycle. It is stated that Levegal PT also increases the affinity of disperse dyestuffs with uniform rates of exhaust in compound shades, improves penetration and does not impair light fastness.

*Registered trademark, Bayer Leverkusen

LUMATEX BINDER FD
(Putnam)

Combination of resins. Binding agent in printing and padding of pigments.

LUMATEX BINDER MD
(Putnam)

Combination of resins. Binding agent in printing and padding of pigments.

LUMATTIN SL
(Putnam)

White pigment in combination with cation active dispersing agent. Substantive delustering agent for rayon and staple fiber.

LUNETZOL A
(Putnam)

Sodium salt sulfonated fatty acid condenstation product. Non-foaming wetting and levelling agent in vat and naphthol dyeing.

LYOGEN* P
(Sandoz)

Leveling agent especially developed for use with Sandonyl and Sulfonine dyes to eliminate barré effects on heat textured filament nylon.

LYOGEN* SMK
(Sandoz)

Leveling agent for use with neutral dyeing premetallized dyes on wool, silk, and nylon. Affords slow, uniform rate of dyeing and is said to give perfectly level shades on wool in all forms, from baths set at pH 4-5, the best region for fiber protection. Lyogen SMK is also effective in weakly acid baths or where ammonium sulfate is used. No adverse effects on fastness to light or wet fastness.

*T M Sandoz, Inc

MELLTONE E
(Crown)

A nonionic surface lubricant and softener. Compatable with most finishing agents. It is said to provide excellent softening with starch or resin finishes. Resistant to oxidation and yellowing.

META SOFTENER A
(Bryant)

A highly concentrated nonionic softener that is said to impart the maximum fullness of hand, plus having excellent resistance to yellowing and which may be used with a complete variety of other finishing materials. A non-nitrogenous softener that is recommended for use in chlorine retention finishes.

META TOLUYLENE DIAMINE
(Aceto)

Meta toluylene diamine, also known as toluene-2,4-diamine, is used in direct dyeing of fur and leather, as an intermediate in the production of such dyes as Acridine Yellow (CI 785), Immedial Green Yellow G, etc; in photographic colors, and as an intermediate in the manufacture of polyurethane resins.

2-METHYL-1-BUTANOL
(Union Carbide)

$CH_3CH_2CH(CH_3)CH_2OH$. A water-white liquid. M W, 88.15; Sp G, 0.8190 at 20/20°C; B P, 128°C (760 mm); Sol in water, 1.6% by wt at 20°C; completely soluble in most common organic solvents. Undergoes reactions typical of alcohols. The *alpha*-methyl substitution gives added heat stability to esters. Suggested uses: chemical intermediate for mining chemicals, oil additives, pharmaceuticals, surface active agents, resins, plasticizers; for solvent applications. Availability: semi-commercial quantities.

2-METHYL-2-ETHYL-1,3-DIOXOLANE
(Union Carbide)

$(CH_3)(C_2H_5)COCH_2CH_2O$. M W, 116.16; Sp G, 0.9392 at 20/20°C; B P, 117.6°C (760 mm); V P, 14.2 mm at 20°C; R I (n_D), 1.4095 at 20°C; Fr P, −82°C; sol in water, 2.2% by wt at 20°C; sol of water in, 1.23% by wt at 20°C; at 25°C miscible in all proportions with acetone, benzene, ethyl ether, heptane, methanol, carbon tetrachloride; color, water-white. Suggested uses: as a selective blocking agent for keto groups in the syntheses of complex molecules such as testosterone, progesterone, other hormones and steroids, flavoring materials, agricultural chemicals; as a reaction medium; as an extraction solvent. Availability: semi-commercial quantities.

2-METHYL 1,3-PENTANEDIOL
(Union Carbide)

$CH_3CH_2CH(OH)CH(CH_3)CHON$. M W, 118.17; Sp G, 0.9745 at 20/20°C; B P, 220.3°C (760 mm); Fr P, sets to glass below −30°C; completely soluble in water. Suggested uses: chemical intermediate for the production of plasticizers, polyesters, synthetic lubricants. Availability: research quantities.

2-METHYLPENTANOIC ACID
(Union Carbide)

$CH_3CH_2CH_2CH(CH_3)COOH$. M W, 116.16; Sp G, 0.9242 at 20/20°C; B P, 196.4°C (760 mm); color, water-white; sol in water, 1.3% by wt at 20°C. Chemical properties: undergoes reactions typical of organic acids. The *alpha*-methyl substitution gives added thermal stability to esters. Suggested uses: intermediate for synthetic lubricants, plasticizers, vinyl stabilizers, metallic salts, nonyellowing alkyd resins. Availability: semi-commercial quantities.

METRO VATCLEAR* CONCENTRATE
(Metro-Atlantic)

A newly developed printing vehicle for vat dyestuffs. The product is supplied as a concentrate which is emulsified under high speed agitation to produce a print paste which, it is claimed, will yield cleaner prints, better hand, better color value, faster aging, easier oxidation and washing than normal vat gums that have been used in the past.

*Patent Pending

METROTEX CLEAR CONC SPN
(Metro-Atlantic)

A new one-piece printing vehicle for the fixation of water phase pigments. Printing pastes are prepared by the simple addition of water and solvent under high speed agitation. Excellent fixation and good definition are said to be characteristic of the results obtained with Metrotex Clear Conc SPN.

MONOALLYLAMINE
(Shell)

A highly reactive material, combining in one molecule the activity of a primary amine and a mono-olefin. It readily forms amides, imides and carbamates, leaving the double bond free for further reactions, such as halogenation and polymerization. It is suggested as an intermediate for dyestuffs, resins, rubber chemicals, and pharmaceutical compounds.

MORENE S
(Moretex)

An organic complexing agent for iron and aluminum in alkaline solutions. It contains no amine. This is said to be an excellent sequestrant agent for iron, copper, and aluminum in any alkaline condition of preparation of fabric. It will readily dissolve iron from equipment and redeposition is prevented.

MOROPON N-100
(Moretex)

A 100% active nonyl phenol ethylene oxide surfactant recommended by the manufacturers as an all-purpose cleansing agent. Its dispersing properties recommend its use as a dyeing assistant and dispersant in finishing mixes.

MOROSOL SL
(Moretex)

A polyoxyethylene sorbitol distearate emulsifier and softener. Said to be an excellent emulsifier for natural and synthetic waxes and oils. It is self-emulsifying in water and will tolerate a high degree of hardness in the presence of electrolytes. Imparts a soft hand when applied to cottons and polyester fabrics and an excellent plasticization when used as a component of a sizing softener. Because of its nature, it is compatible with anionic or cationic materials.

NEKANIL AC SPECIAL
(Putnam)

Nonionic compound. Dispersing agent for acetate dyestuffs.

NEKANIL C CONC
(Putnam)

Nonionic compound. Washing and wetting agent in soap liquors. Levelling and dispersing agent in dyeing.

NEKANIL LS
(Putnam)

Sulfonation product of polyether. Washing and cleaning agent. Dyeing assistant for levelling and penetration for all dyestuffs except basic.

NEKANIL O SOLUTION
(Putnam)

Nonionic fatty alcohol derivative. Aids in dissolving dyestuffs. For aftertreatment of dyeings and prints to obtain fastness to rubbing.

NEKANIL S
(Putnam)

Sodium salt of substituted naphthalene sulfonic acid. Penetrating and levelling agent with affinity for animal fibers.

NEKANIL SBS PASTE HIGH CONC
(Putnam)

Alkylated naphthalene sulfonic acid. For carbonizing wool.

NEKANIL W EX
(Putnam)

Nonionic fatty derivative. Detergent for wool in all stages of processing.

NYAMINE DFS
(Nyanza)

A new cationic softening agent recommended for all textile fibers, animal, vegetable or synthetic. It is a pure white product very easily dispersible in water and does not cause yellowing of the white or discolor even the most delicate shades. It is stated that goods softened with Nyamine DFS, besides having a desirable soft feel and good hand, are static free, a very important feature in the case of Orlon, Dacron and other synthetic fibers.

NYANTHROL CL
(Nyanza)
Said to be a very excellent carrier for dyeing Dacron with acetate colors. In the amounts used in the dye bath it is nontoxic and does not impair the light fastness if not completely removed from the goods. It is a stable uniform dispersion of a combination of organic chemicals, some of which have been used singly heretofore, incorporating the advantages of aromatic hydrocarbons in a new, stabilized form.

NYANTHROL FA
(Nyanza)
A newly developed product which is recommended as a fulling assistant to prevent the staining or dulling of whites in the fulling operation. This commonly occurs where raw stock is dyed and made into cloth and the addition of Nyanthrol FA to any neutral or alkaline fulling solution is said to prevent white materials from becoming discolored.

NYANZA RETARDER OB NEW
(Nyanza)
Recommended as a dyeing assistant for basic colors when dyeing Orlon. It is added right to the dye bath and is said to promote level dyeing and penetration.

NYKLEEN C
(Isochem)
Soluble caseinate detergent in dry powder form which is said to readily remove graphite, oils and most severe stains from nylon, Dacron, Arnel and Orlon. Low concentrations solubilize stains and carry them away. It can be used in combination with normal detergents or solvents to boost efficiency and improve rinsing.

ORCOSPERSE L
(Organic)
Where extremely fine particle size and comparatively permanent suspensions are desired and required, this dispersing agent is claimed to be a definite necessity. Due to its neutral reaction and general stability to variations of pH, it can be used in the dyeing of developed colors on Dacron and in the vat-acid process as well as being used to promote the fine dispersion required for pigments in textile printing and in the production of inks and color lakes.

ONYXSAN* OS
(Onyx)
A powerful softening agent that imparts a distinctive sweater or knit goods finish with extremely good money value. It is said to be highly efficient on acrylic-type fibers such as Orlon, Acrilan and Darlan.

*Registered trademark

PELOSOFT
(Tanatex)
Anionic and nonionic emulsions of polyethylene. Extremely useful as softeners and lubricants. Do not affect water repellency.

1-PENTANOL
(Union Carbide)
$C_4H_9CH_2OH$. M W, 88.15. Density, 0.8144 at 20/20°C; B P, 138°C (760 mm); sol in water, 2.7% by wt at 22°C; color, water-white; odor, mildly fruity. Chemical properties: undergoes reactions typical of normal alcohols. Suggested uses: intermediate for pharmaceuticals, plasticizers, synthetic lubricants, mining chemicals, corrosion inhibitors, wetting agents. Availability: commercial quantities.

PERAPRET A
(Putnam)
Dispersion of plastics. Finishing agent, as well as a binder for pigment and bronze printing.

PERAPRET AX45
(Putnam)
Plastic dispersion. Finishing agent and binder for pigments and bronze in printing.

PERAPRET LN25
(Putnam)
Plastic dispersion. Finishing agent for spreading and padding processes.

PERAPRET PN
(Putnam)
Dispersion of plastics based on acrylic acid.

PERMA KLEER KR
(Refined)
A modified hydroxy polyamino carboxylic acid. It is an iron sequestrant for use in cement-lined kiers.

PERMANENT ADHESIVE H
(Putnam)
Application on screen printing tables to act as an adhesive for the cloth. Possesses excellent adhesive qualities and is not attacked by solvents.

PIGMENT WHITE 18Z
(De Paul)
A finely dispersed oxide paste for resist printing. Pigment White 18Z gives the chemical properties as well as the coverage and whiteness required.

PILATE FAST SALT O SOLUTION
(Putnam)
Fatty alcohol derivative. Dyeing assistant for Pilate fast dyestuffs.

PIPERAZINE, FLAKE
(Union Carbide)
$HNCH_2CH_2NHCH_2CH_2$. A white, free-flowing, crystalline solid. Minimum purity, 98%. M W, 86.14; M P, 108°C; flash point, (open cup), 190°F, B P, 145°C (760 mm); Sol in water, 15% by weight at 20°C. Suggested uses: intermediate for the manufacture of anthelmintics, tranquilizing drugs, motion sickness drugs, antihistamines, synthetic resins, rubber chemicals, dyestuffs, surfactants and corrosion inhibitors. Availability: commercial quantities.

PLIOLITE LATEX 151
(Goodyear)
An aqueous dispersion of a reinforcing type stryene-butadiene copolymer. Developed as a reinforcing latex, its principal application is the modification of other rubber latices. Use of Pliolite Latex 151 is said to produce an increase in hardness, stiffness and modulus. Improvements in tensile strength and tear and water resistance have also been noted. The latex can be blended with most other rubber latices, which may then be compounded in their normal manner. Pliolite Latex 151, used in both curing and noncuring formulations, has little effect on curing and will, if anything, improve aging characteristics. Applications include: fabric coating compounds to increase stiffness and provide a firmer hand, carpet backing compounds to increase stiffness and improve aging, and latex foam to improve processing and increase load bearing capacity and tearing strength.

POLYBOND BF
(Polymer)
Specially manufactured binder and plasticizer for heavily compounded back fills. Is reported to eliminate dusting, windowing, and to allow a full pull out in one application.

POLYBONDS 20-60-90
(Polymer)
A series of carbohydrate ethers recommended for use in finishing. Are recommended by the manufacturers for use as hand builders in resin finishes where full, firm, resilient hand is desired, and the resulting finish is reported to have a minimum of adverse effect on strength, tear, and abrasion. Is said to be useful in combination with silicone finishes with a minimum of adverse effects on repellency and stain resistance. In plain finishes, the hand is full, lively, clear, and resistant to mark off.

POLYETHYLENE: EMULSIFIABLE A-C* POLYETHYLENE 629
(Semet-Solvay)
An emulsifiable polymer useful for preparing cationic, nonionic, anionic and other specialty emulsions for textile finishing applications. When properly formulated for textile applications, A-C Polyethylene 629 is said to provide: higher abrasion resistance, increased tear strength, reduced needle cutting, improved sewability, and better wash-wear finishes in a wide range of desirable hand properties. The prepared or final formulation will not retain chlorine; will not yellow whites; will not scorch at elevated temperatures; and will not affect dye shades or light fastness properties.

*Registered trademark

POLYFILM D
(Polymer)
An acrylic resin copolymer, furnished in emulsion form that is readily solubilized for application by alkali for the sizing of Dacron* filament yarns with a readily removable size.

*Trademark for DuPont polyester fiber

POLYFILM L
(Polymer)
A polyvinyl acetate copolymer emulsion furnished in a form that is readily converted to solution by ammonium hydroxide for the purpose of giving a "loom finish" warp size to woven acetate goods. Especially compounded to minimize can sticking, scumming, and to promote penetration into the yarns. Is reported to eliminate "sandy" warps completely.

POLYFLEX 910
(Polymer)
An amphoteric emulsion of a polymerized fatty waxy material that acts as a thermosetting resin plasticizer. Is reported to produce finishes that possess decidedly improved tear strengths and flex abrasion resistance, particularly when used in conjunction with Polybond 90. Polyflex 910 is capable of cross-linking with thermosetting resins and becomes an integral part of the resin film and possesses the durability of the cured resin itself.

POLYMEL PE
(Crown)
A nonionic dispersion for polyethylene. Designed for use in resin finishes to improve softness crease resistance and abrasion resistance.

POLYMUL CS-41
(Nopco)
A polyethylene emulsion (30% solids) used for up-grading the abrasion resistance of fabrics treated with urea formaldelyde or melamine resins. It is said to improve the tear resistance and tensile strength of resin treated fabrics, yet does not affect the crease proofing qualities. Stable to the presence of strong acid solutions and heavy metal ions.

POLYMUL MS-40
(Nopco)
A polyethylene emulsion (40% solids) to be blended with urea-formaldehyde and melamine type resins. It is said to improve the abrasion resistance and tear and tensile strength of fabrics, without detracting from the wrinkle recovery properties of the finish. Stable in strong acids and the salts of heavy metals, Polymul MS-40 imparts a highly desirable hand to cotton fabrics when used as a pure finish.

POLYOX* WATER-SOLUBLE RESIN WSR-35
(Union Carbide)
Extremely high molecular weight polymer of ethylene oxide. White resin, in granular form, M P 65°-67°C. Five percent aqueous solution; viscosity, 300 cps. Suggested uses: for paper coatings, detergent binders, and adhesive applications. Availability: development quantities.

*Trademark

POLYOX* WATER-SOLUBLE RESIN WSR-205
(Union Carbide)
Extremely high molecular weight polymer of ethylene oxide. White resin, in granular form, M P 65°-67°C. Five percent aqueous solution; Viscosity, 2000 cps. Suggested uses: as thermoplastic processing resin for manufacture of water-soluble films. Availability: development quantities.

*Trademark

POLYOX* WATER-SOLUBLE RESIN WSR-301
(Union Carbide)
Extremely high molecular weight polymer of ethylene oxide. White resin, in granular form. M P, 65°-67°C. One percent aqueous solution: Viscosity, 3000 cps. Suggested uses: as a general thickener, detergent stabilizer, film former in aerosols, stabilizer in tooth pastes. Availability: development quantities.

*Trademark

POLYOX* WATER-SOLUBLE RESIN WSR-701
(Union Carbide)
Extremely high molecular weight polymer of ethylene oxide. White resin, in granular form. M P, 65°-67°C. One percent aqueous solution; Viscosity, 5500 cps and higher. Suggested use; coagulant grade resin. Availability: development quantities.

*Trademark

POLYOX* WATER-SOLUBLE RESIN TEXTILE WARP SIZE GRADE
(Union Carbide)
Extremely high molecular weight polymer of ethylene oxide. White resin, in granular form, M P, 65°-67°C. Suggested use: for warp size evaluation. Availability: development quantities.

*Trademark

POLYROPEL CB
(Polymer)
A highly concentrated paraffin wax-zirconium type water repellent said to be of exceptional durability for this type of water repellent. It is stated that it yields high spray ratings and hydrostatic results consistently, is very stable in nature and will give prolonged runs without breaking out on application in the pad.

POLYROPEL CBW
(Polymer)
A highly concentrated paraffin wax, zirconium-type water repellent specifically designed to produce semi-durable water repellent finishes on wool fabrics. May be applied either from long volume as dyebecksoaper, etc. or by pad operation.

POLYSOFTENER 800 CONC
(Polymer)
A 100% active cationic softener possessing unusually high resistance to yellowing. Is easily dissolved by simple heating to 180-200° F with steam and water only. Does not require the addition of acids or other solubilzing ingredients. Is reported to be compatible with all usual type resin baths, including those for glaze and embossing work, as well as those containing cationic fixing agents usually used in the trade.

POLY TERGENT* B 200
(Olin Mathieson)
An alkyl aryl polygycol ether liquid, nonionic emulsifier and wetting agent sparingly soluble in water. It has a specific gravity of 1.04, cloud point of 0°C (1% aqueous solution) and is stable in strong acid and alkaline solutions. It is effective in operations involving the removal of oils and greases and in penetrating coatings that must retain their water resistance.

*Poly Tergent is an Olin Mathieson trademark.

POLY TERGENT* B 300
(Olin Mathieson)
An alkyl aryl polyglycol ether, liquid, nonionic surfactant said to possess outstanding properties as a wetting agent, emulsifier, detergent and dispersant. It has a specific gravity of 1.06 and is completely soluble in most organic solvents and water from 0°C up to its cloud point of 52-56°C (1% aqueous solution). Poly Tergent B 300 is used to scour textiles in all stages of manufacture and in all types of equipment. Among the uses in which it is employed are kier boiling, raw wool scouring, desizing, bleaching, dyeing, printing, soaping, carbonizing and finishing.

POLY TERGENT* G 200
(Olin Mathieson)
An alkyl phenol polyglycol ether liquid nonionic surfactant having a specific gravity of 1.03, a cloud point of 0°C (1% aqueous solution) and a solidification point of -10 to -15°C. It is soluble in most organic solvents but only 0.2% or less soluble in water and ethylene glycol. Designed primarily as an emulsifying agent and an associate emulsifier, it is also used as a textile finishing agent where penetration and organic solubility are important.

POLY TERGENT* G 300
(Olin Mathieson)
An alkyl phenol polyglycol ether, liquid, nonionic surfactant having a specific gravity of 1.05, a cloud point of 62-70°C (1% aqueous solution) and a softening point of 0-5°C. It is completely soluble in water and organic solvents but insoluble in kerosene and mineral spirits. It is useful as an assistant in desizing, in bleaching, in dyeing and in after-treatment of prints and dyeing, in wool carbonizing, in kier boiling of cotton and as a penetrant for many types of finishes.

POLY TERGENT* J 200
(Olin Mathieson)
A nonionic 85%-active, liquid surface-active agent that is chemically an aliphatic polyoxyethylene ether alcohol. It is water dispersible but miscible at room temperature with most organic solvents. It is used to wet out oil-contaminated fibers and fabrics and as a component part of sizes and finishes to promote rapid wetting action. It is also used effectively in desizing and bleaching operation, in the caustic boil off and as an auxiliary in dyeing operations.

POLY TERGENT* J 300
(Olin Mathieson)
An aliphatic polyoxyethylene ether alcohol, liquid, 85%-active, nonionic surfactant said to possess excellent wetting and detergent properties. It has a viscosity of 1.02 and a cloud point of 52-55°C (1% aqueous solution). It is recommended for use by itself or with cationic detergents in textile wet-processing wherever wetting and good detergency are required.

POLY TERGENT* J 400
(Olin Mathieson)
An aliphatic polyoxyethylene ether alcohol nonionic surfactant that is a clear, 85%-active, water soluble liquid. It has a specific gravity of 1.04 and a cloud point of 86-89°C (1% aqueous solution). It is recommended for use wherever wetting and detergent action is required. Its chemical stability in acids and alkalies makes it useful in scouring raw wool, tops, yarn and piece goods and in wool carbonizing. It has a low affinity for wool and is readily rinsable.

POLY TERGENT* J 500
(Olin Mathieson)
A water-soluble nonionic surface-active agent offered as an 85% aqueous solution. It is a chemically stable aliphatic polyoxyethylene ether alchol with a specific gravity of 1.05 and a cloud point above 100°C. It is designed for use as a dispersant, low-foaming detergent and associate emulsifier. It can be used in all phases of textile processing and is an effective retarding and leveling agent in dyebaths.

POLYTEX #201
(Brown-Allen)
This new textile softener is a clear, transparent emulsion. It is reported to be effective in imparting improved hand and drape to starch-sized fabrics, and to reduce water-spotting to a minimum. It is said to be readily miscible with water to form dilute, stable emulsions. Its stability and uniformity, it is said, make it unnecessary to agitate the storage drums prior to use. The manufacturer states that Polytex #201 may also be used as a parting agent for textile calendering and as a grinding medium for colors.

PPI 9137
(Morningstar, Nicol)
Print thickener with high water-taking capacity. Used with all types of dyestuffs and colorants, it is said to be convenient to use and to possess a high color yield. Easily removed. Useful as a "buck-up" thickener in conjunction with starch and gum thickeners frequently employed.

PRINT GUM #100
(Hart)
A synthetic gum for screen or machine printing said to have excellent viscosity characteristics and to yield sharply defined prints.

PRINTING GUM 5960
(Morningstar, Nicol)
Natural gum-based cold-water-soluble print thickener for aniline-blacks, Rapidogens, Indigosols, vat flash aging. Used at low solids, easily removable.

PROCION* RESIST AGENT
(Arnold, Hoffman)
A resist agent specifically for use in obtaining white resists under ground shades padded or cover-printed with Procion dyes. It is recommended for use with British gum thickening. Procion Resist Agent may be removed if necessary, before overpadding with Procions, by a short soaping treatment.

*Registered trademark

PROPYL AMINE
(Union Carbide)
$CH_3CH_2CH_2\text{-}NH_2$. M W, 59.11; Sp G, 0.7182 at 20/20°C; B P, 48.5°C (760 mm); −12°C (50 mm) and −37°C (10 mm); V P, 248 mm at 20°C; Fr P, −83°C; completely soluble in water, ethyl ether and methanol at 25°C; R I (n_D), 1.3882 at 20°C. Chemical properties: undergoes reactions typical of primary amines. Suggested uses: preparation of corrosion inhibitors, emulsifiers, dyestuffs, rubber chemicals, petroleum specialties, insecticides, textile finishing agents and pharmaceuticals. Availability: semi-commercial quantities.

PRYM SPECIAL
(Warwick)
Reactant resin used in stabilized and crease-resistant finishes on cellulosic and synthetic fabrics. It is said to be particularly effective in the stiffening treatments of nylon, nettings and shoe fabrics. It has a very low free formaldehyde content.

RANEDARE* SLC & RANEFIX SLC
(Metro-Atlantic)
A low temperature silicone water repellent emulsion and catalyst which are recommended for use on any fabric with the exceptions of wool and silk where durable silicone water repellent effects are required. Good results can be obtained by simply padding and drying. No cure is required.

*Trademark

RANEDARE* SWE & RANEFIX SWE
(Metro-Atlantic)
A low temperature silicone water repellent emulsion and catalyst for exhaustion work on woolen fabrics. The water repellent is simply exhausted onto the goods and dried by any convenient method. No cure is required for durable water repellent effects.

*Trademark

RANEDARE * SWP & RANEFIX SWP
(Metro-Atlantic)
A low temperature silicone water repellent emulsion and catalyst for pad application to wool fabrics. Goods are simply padded and dried by routine methods. No cure is required for durable water repellent effects.

*Trademark

RAYGOMM T
(Stein, Hall)
Modified starch finishing agent for cotton & rayon.

REPELOSAN
(Onyx)
Repelosan is a silicone emulsion specifically developed for durable softening, lubrication and the provision of highest levels of tear strength and abrasion resistance, especially when used in conjunction with resins. Repelosan is said to insure complete resistance to yellowing and provide a full, silky softness.

REPEL-O-TEX* ER
(Onyx)
A 30% silicone emulsion noted for durable water repellency, stability and relatively low cost. Recommended by the manufacturers for use with silicone catalyst Repelotex #4, on cotton, rayon, synthetics and blends to give excellent initial water repellency and durability to washing and drycleaning. Excellent stability with thermosetting resins, hand modifiers and non-slip additives.

*Registered trademark

REPEL-O-TEX* ER CONC
(Onyx)
A 60% silicone water repellent emulsion noted for durable water repellent effects and said to be characterized by excellent money value due to high concentration and outstanding storage and in use stability. In conjunction with Repelotex #4 silicone catalyst it will afford durable repellent characteristics on cotton, rayon and synthetic blend fabrics.

*Registered trademark

REXOLUBE AC
(Emkay)
The removal of excess nitrite in the production of diazotized colors is a necessary and time consuming operation. After one rinse, Rexolube AC added to the box or jig, is said to efficiently eliminate the nitrite in a short time. Bronzing blacks and browns is reduced to a minimum.

REXOSOLVE EP
(Emkay)
A highly concentrated, effective cleaner for stubborn oily and greasy soils. Can be used with alkalies, phosphates and detergents. Produces stable dispersions in water which are said to work efficiently with badly soiled greige goods.

REXOWET GR
(Emkay)
Is claimed to be one of the fastest wetting agents commercially available. Effective in piece, raw stock, package and skein dyeing. It is a low foamer and an efficient "wetter" at low temperatures.

REZEMUL
(Bryant)
A very finely dispersed nonionic polyethylene emulsion for use as a softener in a variety of resin formulations and standard finishing procedures. It is said to improve tear and tensile strength.

RHOPLEX* B-5
(Rohm & Haas)
A soft, aqueous dispersion of an acrylic polymer with excellent chemical and mechanical stability. It is recommended as a pigment dyeing binder, for bonding non-wovens and for use with thermosetting resins on wash-wear cottons.

*Registered trademark

RTF-350
(Stein, Hall)
Starch-resin blend. Laundry-resistant starch finish for cotton and rayon.

SEYCO-BRITE 5513
(Seydel-Woolley)
This product is a phosphated synthetic, effective as a detergent and surface-active agent under a wide range of conditions. It is particularly recommended by the manufacturers for use in alkaline baths such as kiering operations, alkaline boil-off, or alkaline bleaching operations. In these it will produce a clean, white absorbent bottom, giving a very good prepare for subsequent processing.

SEYCO-LUBE 43
(Seydel-Woolley)
An emulsion of polyethylene designed for textile finishing operations. Seyco-Lube 43 has been applied both as a softener and as a lubricant—alone and in combination with starches and other softeners. Increasingly used on resin finished fabrics to enhance tear and tensile strength as well as abrasion. Takes the place of synthetic softeners in resin application. The total range of possibilities for the use of this polyethylene emulsion is still being expanded.

SEYCO-VEL 47
(Seydel-Woolley)
This product is designed to produce a smooth surface hand on white goods, such as sheetings. The softener is practically white itself, and is storage-stable. It is compatible with starches, gums, and many other finishes, and is recommended by the manufacturers especially for use with starching finishes where high luster is desired, as it materially increases the sheen and luster of the goods, particularly when calendering operations are used. Excellent results are said to be obtained on Dacron/cotton fabrics.

SEYCO-VEL 4978
(Seydel-Woolley)
A powerful softening oil, Seyco-Vel 4978 is light enough in color to be recommended for application to bleached cottons and rayons. It produces a smooth soft hand with a good drape. It is stated that for towel finishes or "Sanforized" goods, it has sufficient absorbency so that it may be used as a softener without any additional rewetting agent. A pure glyceride product—contains no mineral oils.

SEYCO-VEL A-5
(Seydel-Woolley)
An anionic softener with particular value in finishes such as "Sanforized" goods, where its powerful rewetting ability is needed. The rewetting ability is said to be combined with excellent action for producing a full, soft hand, and an effective lubricating action making it useful for goods in which high sewability is required. It is of a very light color, and made from highly stable chemicals. Being a concentrated product, only small amounts are required to produce the desired effect.

SEYCO-VEL C-73
(Seydel-Woolley)
A powerful cationic softener designed to fulfill the need for a cationic with extremely high resistance to yellowing of white goods. Seyco-Vel C-73 may be applied in a resin bath, on knit goods and hosiery, or as a top finish for treatment of resin-finished goods. Particularly recommended for application to cotton and rayons. The high concentration of this product is said to afford increased money value.

SEYCO-VEL N-41
(Seydel-Woolley)
This softener was especially designed to give the fullest and softest hand with the lowest concentration of softener—with highest resistance to yellowing or change of shade. Having a nonionic base, it is compatible with a variety of textile auxiliaries and may be used, for instance, in resin baths for crease-resistant finishes. Particularly recommended by the manufacturers to bring out deep seated luster on polished drills, twills, and broadcloths.

SEYCO WO-3
(Seydel-Woolley)
This product is a highly emulsifiable oil used in wool processing to improve spinning properties. Also effective as an aid in garnetting of wool. An excellent lubricant, it is highly emulsifiable, and thus readily removable in desizing and finishing operations. It is chemically very stable, based essentially on a blend of nonionic emulsifiers. It is stated that it will not discolor nor cause odor during storage after application; nor does it have any tendency to develop heat, with the result that there is no danger of spontaneous combustion of wool to which Seyco WO-3 has been applied.

SILIGEN A
(Putnam)
Colloidal solution of silica gel. Finishing compound for antislip finish, dirt resisting finish and as an additive to lubricating oils for removal of oil stains.

SODIUM LAURYL SULFATE (Dustless)
(Aceto)
A dustless sodium lauryl sulfate in needle form (Solasol needles). Besides offering greater emulsion stability, the needles are said to eliminate the irritating dust problem accompanying the use of conventional sodium lauryl sulfate powder. In addition, it is claimed that the high concentration of active matter permits greater flexibility in formulations using sodium lauryl sulfate, while at the same time permitting economies in storage and handling costs.

SOFTENER OR
(Arkansas)
A new type of cationic finish which is said to impart an exceptional soft, lofty hand particularly to knit goods made of Orlon and Acrilan. It is also applicable to acetate, nylon, rayon and wool, to obtain unique softening effects. It also is said to have excellent resistance to yellowing under normal drying conditions, and in this respect is superior to most cationic finishes. In consistency, Softener OR is a soft paste which disperses readily in warm or hot water and premixing is advisable before adding to the finishing bath. The presence of anionic detergents and wetting agents must be avoided, and, to this end, a thorough rinsing is necessary before finishing.

SOFTYNE
(Hart)
An anionic softener said to have good resistance to yellowing on heat and excellent lubricating and anti-static properties.

SOFTYNE SPECIAL
(Hart)
A nonionic softener showing unusual scorch resistance. It is said to have superior softening, lubricating and anti-static properties and to improve sewability of fabrics. Recommended for all finishes on yarn, piecegoods, brushed or knitted fabrics, especially where high temperature mechanical finishing is required.

SOLVENT SCOUR
(Treplow)
A blend of selected solvents and surfactants developed particularly for the solvent scouring of synthetic filament materials in a boil-off pressure unit, but with general solvent and scouring properties. It is claimed that Solvent Scour has demonstrated superior results in removing greases, graphite, flange marks, and other stains and contaminants, while in itself being compatible with a wide variety of other chemicals and auxiliaries as well as being readily and completely rinsable.

SOLVITOSE C5
(Morningstar, Nicol)
This new textile print thickener is a cold-water-soluble product that reportedly produces high color yield and is readily removable from fabric without enzyme treatment. It is a starch ether which is said to produce smooth, free-flowing solutions. The cold water solubility of this thickening agent reportedly does away completely with cooking kettles and saves the time of the cooking and cooling period required for starch and starch-gum mixtures. With simple agitation, a 50-gallon batch can be prepared in 40 to 60 minutes. Solvitose C5 is readily removed in the normal washing operation, and does not affect subsequent finishing operations, it is claimed. Solvitose C5 can be used for both machine and screen printing with vats, Indigosols, and rapidogens; but is not suitable for dyestuffs requiring chromium or aluminum salts for fixation. It is stated that good mark, sharp outline and clear blotches are produced. Its color yield reportedly compares favorably with mixtures of starch-British gum, or starch-tragacanth. Solvitose C5 is sold in dry granular form, and at 10 to 12% it gives sufficient viscosity for the average print color. It is claimed that neither sequestering agents nor other chemical additives are needed to improve the flow or other working conditions.

SOLVOCINE
(Putnam)
Polyglycol derivative. Printing assistant; humectant, pasting agent for acid and basic dyes.

SPARLITE* C
(Arnold, Hoffman)
A fluorescent whitening agent said to increase the whiteness of bleached or undyed textiles and to enhance the appearance of dyed fibers. Sparlite C is a water-soluble powder which is applied at 0.01-0.1% on the weight of the fiber, at 105-175°F. It may be applied by exhaustion or by padding methods.

*Registered trademark

SPECO 76
(Independent)
Polyethylene ether. It is used as an emulsifier in the degreasing of wool, as a leveling agent in dyeing, and emulsification of waxes in oils.

SPECO ANTIFOAM
(Independent)
A silicone emulsion used for defoaming aqueous and nonaqueous systems.

SPECO BLEACH ASSIST
(Independent)
Salt of organic sulfuric acid used for gas and corrosion retarder in sodium chlorite bleaching.

SPECO INCHLITE
(Independent)
Complex organic buffering agent blended with sodium chlorite for use as a bleaching compound for cotton and synthetic fibers.

SPECO RETARDER 100
(Independent)
A complex nitrogenous compound used as a retarding agent in dyeing.

SPECO SURFACTANT L
(Independent)
Polyoxyethylene sorbitan monolaurate used as a water-dispersible liquid nonionic wetting agent.

STABILIZER SRS-55
(Seaboard)
A versatile stabilizer which is said to be finding wide use as a surfactant in the emulsion polymerization of monomers, and as a mechanical stabilizer and anticoagulant in the post-stabilization of a wide variety of compounded natural and synthetic latices. The following properties are claimed: highly efficient even in small quantities, low foaming, anionic, infinitely dilutable with water without gelatin, lightfast, and economical to use on a cost basis.

STACOLLOID* GUMS
(Staley)
A new series of noncongealing sizing and finishing agents derived from corn starch. They produce films said to be of excellent adhesion, strength, flexibility and clarity. Compatible with most resins.

*Registered trademark

STADEX* DEXTRIN 85
(Staley)
A white dextrin developed for the stabilization of vat dyes at high temperatures. It is a corn dextrin of high water solubility which prevents over-reduction of vat dyestuffs in reduced solutions.

*Registered trademark

STADEX* DEXTRIN T-4
(Staley)
A white corn dextrin for plissé printing. It is used for its superior viscosity stability in highly alkaline print pastes.

*Registered trademark

STRIPPING AGENT SOLUBLE CONC
(Putnam)
Zinc formaldehyde sulfoxylate. Stripping agent for textile fibers.

SUNTONE METALLIC BINDER 425
(Warwick)
A clear binder used in printing metallic powders to produce gold and silver effects. It is claimed to have outstanding durability to washing and dry cleaning. It is stated that it has good leafing qualities which results in excellent coverage. It has unusually good running qualities.

SUPERFLEX 120PTG
(Stein, Hall)
Modified starch for vat printing.

SUPERLAST K 500
(Morningstar, Nicol)
Low viscosity, low solubility, readily prepared textile finishing compound. It is said to produce a super stiff finish with flexible body and a clear, brilliantly smooth film of excellent adhesion and penetration.

SUSSEX GUM A
(Stein, Hall)
Modified starch for vat printing.

SYL-MER SILICONE FINISHES
(Dow Corning)
A series of stable, water-dilutable nonionic emulsions, 30% silicone. Each emulsion is supplied with an appropriate water soluble catalyst solution. Properly applied and cured, these finishes impart durable water repellency, spot and stain resistance to waterborne substances and a full luxurious hand.

Syl-mer* 61, an exhausting type finish for woolen and worsted fabrics requiring normal wool drying temperatures for an effective cure. High curing temperatures are not necessary. Designed for maximum ease of application, Syl-mer 61 may be applied from conventional dyebeck or dollywasher equipment.

Syl-mer* 71, a low temperature curing silicone finish on woolen and worsted fabrics for application by conventional padding methods. Superior bath stability and excellent wetting-out properties make Syl-mer 71 especially easy to apply.

Syl-mer* 72, a padding type silicone finish, can be applied to synthetic fibers, natural fibers and fiber blends utilizing a wide range of curing temperatures as a function of time. Most of the conventional finishing resins, dye fixatives and other auxiliary finishing agents can be used in combination with Syl-mer 72 to develop a variety of desirable finish effects.

*Trademark Dow Corning Corporation

SYL-SOFT 10 AND SYL-SOFT 12
(Dow Corning)
Silicone-based softeners or lubricants for use in fabric finishing. Syl-soft 10 and Syl-soft 12 are stable, water-dilutable nonionic emulsions containing 30% silicone. Only a small amount of Syl-soft is required either alone or in combination with resin finish formulations to improve the fabric handle, tear strength, crease resistance and sewability. A choice in the degree of softening desired can be made between the two products. These emulsions are easily applied by conventional padding techniques to form a durable, non-yellowing finish or finish additive.

A silicone softener is also available for substantive applications to cotton and synthetic knitted fabrics. **Dow Corning ET-5297,** in addition to the softening properties typical of the Syl-softs, improves the handling characteristics of the fabric. Proper adjustments of the silicone add-on and curing temperatures will offer a water repellent and waterborne stain resistant finish as well as softening.

SYNCAP MPH
(Crown)
A high polymer thermo-setting resin. For use on cellulosic fabrics to impart body and firmness.

SYNTERGENT® 130-W
(Nopco)
A 98%-active, modified nonionic detergent used for scouring raw wool at reduced temperatures (130-135°F). Syntergent 130-W gives softer, whiter, loftier wool. Fibers are physically and chemically unchanged, and average fiber length is said to be longer than when other scouring agents are used. The loftiness of the wool entering the drying ovens permits drying to be done at lower temperatures. Syntergent 130-W improves the yield and color of the wool grease recovered. No special equipment nor deviation from present mill operation is required to use Syntergent 130-W.

SYNTHOSIZE
(Morningstar, Nicol)
Sizing material for spun synthetics and natural fibers. Based upon modern polymer chemistry, it is claimed that this product has introduced new standards for weaving efficiencies when employed on the newer hydrophobic blends.

SYNTHRAVON* P
(Arnold, Hoffman)
A nonionic, water-soluble polyethylene softener for use in thermosetting resin finishing baths. It can also be used as a pure finish on cotton and synthetic yarns. Synthravon P does not contribute to chlorine retention damage or develop rancidity. It is stated that it imparts high tear strengths and improves sewability, and has good wash resistance.

SYNTHRAVON* SL
SYNTHRAVON* A
(Arnold, Hoffman)
These are new nonsubstantive softeners and lubricants. Synthravon SL is recommended for cellulosic fibers and Synthravon A for both cellulosic and synthetic fibers. Both are said to possess good storage stability and resistance to yellowing, and aid in mechanical processes such as winding, sewing and napping. The latter is specifically suggested for use with finishes containing starches or resins.

*Registered trademark

TANAPON X-70
(Tanatex)
Special nonionic for emulsifying Varsol*. 20% Tanapon X-70 solutions in Varsol are completely stable and may be poured into water for easy emulsification. Emulsions are stable to alkali and other materials used in solvent scouring of all fibers.

*T M, Esso Standard Oil Co.

TEXAPRET C NEW
(Putnam)
Copolymer derived from acrylic acid. Sizing and finishing agent for all textiles to impart a full firm hand.

TEXAPRET K POWDER
(Putnam)
Urea-formaldehyde condensation product. Sizing agent particularly for cotton.

TEXAPRET NA
(Putnam)
Water-soluble synthetic resin. Finishing compound particularly suitable for rayons.

TEXAPRET WL CONC NEW
(Putnam)
Concentrated aqueous solution of a highly molecular ether. Finishing compound for all textiles to impart softness.

TEXPAD A
(Stein, Hall)
Modified carbohydrate paste. Adhesive for combing tobacco cloth and burlap.

TEXPAD C
(Stein, Hall)
Cold-water-soluble modified starch. Sizing rug and automotive underlay pads.

TEXPAD 600 J7M
(Stein, Hall)
Cold-water-soluble modified starch. Sizing rug underlay pads.

TEXREZ EXTENDER G
(Stein, Hall)
Amylo-pectin, 100% cold-water-soluble. Hand builder in conjunction with thermosetting resins.

TEXREZ F
(Stein, Hall)
Thermosetting resin. Semipermanent finish for cotton and rayon.

THERMOSCENT* No. 16558
(Fritzsche)
An odor for masking urea-formaldehyde resins and melamine resins which are applied to fabrics. This imparts a pleasing lavender fragrance. It is said to provide maximum odor modification and has a prolonged residual effect. Recommended to be used at the rate of 0.1-0.2%.

THERMOSCENT* No. 23416
(Fritzsche)
An odor for masking urea-formaldehyde resins and melamine reins which are applied to fabrics. This imparts a delicate bouquet. It is said to provide maximum odor modification and has a prolonged residual effect. Recommended to be used at the rate of 0.1-0.2%.

*Registered trademark

TINOPAL* 4 BMA LIQUID
TINOPAL* 3 BSA LIQUID
(Geigy)

Optical brightening agents for cellulosic fibers; these two products except for physical form are identical to the powder types which preceded them. In liquid form they offer dyer or finisher ready-made stock solutions which can be readily measured into the bath. The specific gravity is equal that of plain water making one pint equal one pound. The "3 BSA" brand is a slow drawing product not sensitive to slightly acid conditions and is recommended for critical applications. For optimum results application should be made at 140°F and salt used to achieve exhaust. It is also the product recommended for pad or mangle application prior to kier bleaching. Tinopal 4 BMA is a quick-drawing type, which exhausts completely at temperatures about 100°F without the use of salt.

*Registered trademark

TINOPAL* E LIQUID
(Geigy)

An optical brightening agent which now makes possible the production of clearer, brighter whites on Dacron without the use of chemical bleaching agents. Well adapted for bends of Dacron/cotton and Dacron/rayon.

*Registered trademark

TOCA GUM
(Stein, Hall)

Modified starch finishing agent for cotton.

TRIALLYLAMINE
(Shell)

Is of potential interest as an intermediate for preparation of quaternary ammonium compounds. Other derivatives have been suggested as being of potential usefulness in the fields of rubber chemistry and ion exchange resins.

TRITON* CF-21
(Rohm & Haas)

A nonionic surfactant specifically recommended by the manufacturers for its low-foaming properties, for use as a penetrant in desizing, in continuous boil-off of cottons, and as assistant in dyeing of direct, basic and disperse colors as well as pigment padding.

*Registered trademark

UNIPEROL W
(Putnam)

Nonionic compound. Dyeing assistant particularly valuable in dyeing metal complex dyestuffs. Dispersing agent and colloid protective agent, nonsensitive to acids and alkalies.

UVITEX* A
(Ciba)

A new fluorescent brightener, Uvitex A reportedly produces intense whites on Orlon, with exceptionally good light fastness as compared with the light fastness of brighteners generally. Effective also on nylon and cotton, Uvitex A is useful in treating blends of acrylics with these fibers. Best effects are obtained in bath treatment at about pH 3, at the boil for 30 minutes. The brightener can be applied in sodium chlorite bleaching baths.

*Registered trademark

UVITEX* T PASTE
(Ciba)

A new fluorescent brightening agent that is said to offer an unusual combination of properties, including multifiber effectiveness, versatility in application and the handling convenience of a paste product. It is recommended chiefly for cotton and rayon, but is well suited to a number of blends with acetate, nylon and wool. The bright neutral white effect is obtained at a low exhaustion rate, with good levelness and thorough penetration.

*Registered trademark

UVITEX* VR LIQUID
(Ciba)

This new fluorescent brightener produces strong whites with a slightly reddish cast on cellulosic fibers. It is supplied as a highly concentrated aqueous solution. It is stated that the product is anion active, has excellent stability to alkalis and to peroxide and is applied by exhaustion at temperatures from 80°F up to boiling.

*Registered trademark

UVITEX* VRN SOLUTION
(Ciba)

A liquid fluorescent brightener, eliminating the need for dissolving before using, Uvitex VRN Solution produces strong whitening effects on cotton and rayon. It is anion active, compatible with most finishes and alkaline bleaching. Is preferably applied by exhaustion at temperatures from 80°F up to boiling. Application at the boil gives best fastness to light and to washing.

*Registered trademark

VELUBRA SOFTENER 31-L
(Amalgamated)

A combination of an amide and nonionic softener for use in the finishing of Orlon. This product is said to yield an extremely soft hand with the absence of shade change.

VELVON
(Burkart-Schier)

Textile softener and lubricant. Imparts supple hand as well as good absorbency. Claimed to be an excellent compressive shrinking finishing agent. Recommended for denims, chambrays and other apparel fabrics as well as for heavier goods. Improved cutting and sewing properties.

VIKOPEN DS
(Vikon)

A hosiery dyeing assistant for controlling the union on monofilament hosiery.

VIKOPEN PD
(Vikon)

A nonsurface-active, foam-free dispersing agent for pigments.

VINREZ 130-M
(Stein, Hall)

Modified polyvinyl acetate emulsion. Semi-permanent and water resistant finish for cotton.

VINREZ 3R-58
(Stein, Hall)

Vinyl copolymer. Finish for cotton; rug underlay size.

VINYMUL G-1404
(Morningstar, Nicol)

Synthetic vinyl copolymer textile finishing product. Compatible with starches, gums, most latices. 55% solids. Produces a clear, colorless, odorless film; does not require curing temperatures. Contains no plasticizers and will not migrate. Low temperatures will not embrittle the film. Resistant to oil, fat, solvents. Useful in upholstery fabrics, and other places where its properties are beneficial.

VISCOTEX
(Stein, Hall)

Modified starch paste for a printing assistant.

VULCANOL* ADHESIVE AL-1005-S
(Alco)

A new and revolutionary faster way to splice yarns and tapes eliminating knots and wasted time. It is said to perform instant splicing of nylon, acetate, Acrilan, viscose, cotton, and woolen yarns. The adhesive is supplied in two parts to insure freshness and loss of power. It makes flexible uniform diameter joints that won't snag hooks or needles and is strong enough to withstand the tension of winding, creeling or tufting. It works equally well on binding tapes and burlap coverings.

*Registered Trade Name

WARCOFIX* 403
(Warwick)

A durable dye fixative applied in the final rinses or in finishing operation on direct-dyed cotton or viscose fabrics. It is compatible with copper complexes and thermosetting resins.

*Trademark-registered

WARCOLUBE* C

A special type of polyethylene dispersion said to impart improved abrasion resistance, crease resistance, and tear strength when used either alone or in combination with crease-resistant resin mixes. It is applicable to all natural and synthetic fiber fabrics.

*Trademark-registered

WARCOPEL* 393
(Warwick)

This product is designed for use on rayon, acetate rayon, or blends of viscose and other synthetic fibers. It is compatible with urea-formaldehyde or modified urea-formaldehyde resins to produce durable water-repellent, crease resistant finishes.

*Trademark-registered

WARCOPEL* C
(Warwick)

A durable water repellent applicable to a wide variety of cotton fabrics. It may be used by itself or in combination with urea-formaldehyde and modified urea-formaldehyde types of resin.

*Trademark-registered

WARCOPEL R
(Warwick)

A durable water repellent of the quaternary ammonium type. It is said to have excellent fastness to washing and drycleaning. It produces a soft hand and is said to show minimum discoloration on treated fabrics.

WARCOSET* 380
(Warwick)

A cellulose reactant resin with durable stabilized and crease-resistant type finishes. It is applicable to cotton, viscose, and blends of both.

*Trademark-registered

WARCOSET* 424
(Warwick)

A low, free-formaldehyde, cellulose-reactant type resin. Applicable to cotton and cotton blend fabrics. It is said to produce durable stabilized and crease-resistant type finishes.

*Trademark-registered

WARCOSET* LCR
(Warwick)

A resin product designed to produce finishes having extremely durable chlorine resistance, good stabilization, and crease resistance when applied to cellulosic materials.

*Trademark-registered

WEIGHTER 546
(Arnold, Hoffman)

An easily applied, softener-weighter for application to knit or woven fabrics by non-substantive means. Weighter 546 may be added to acid or alkaline finishing baths without creating stability problems. It will not cause discoloration or odor to fabrics to which it is applied.

WERFULL* DR
(Pioneer)

A fulling agent for woolens and worsteds stable at high concentration of soda ash (up to 10%).

*Registered trademark

WICAFIX GP
(Wica)
A cationic, resinous aftertreatment for fast-to-light direct dyes. It is stated that its use allows excellent washfastness to be obtained with no adverse effects from light exposure. This fixative contains no copper metal and does not contribute to latex deterioration.

WICAFIX HC
(Wica)
A cationic, resinous aftertreatment recommended as an aftertreatment to commercial direct dyes. Excellent washfastness and prevention of migration with no adverse effect upon color value are said to be obtained. Its economy of price and usage rates is attractive.

WICASET WA-89
(Wica)
A 40.0% anionic acrylic emulsion polymer with exceptional adhesion to textile fibers. It is stated that the elasticity of the film and excellent light and heat resistance recommends its use for the finishing and coating of cotton, woolen and synthetic fabrics.

WICATEX FA28 SOFTENER
(Wica)
A nonionic white paste finishing agent recommended especially for cotton and synthetic fibers and fabrics where excellent lubricity and soft handle are desired. Amounts of ½-1%owf for batch processes and 2-5% solutions in continuous operations are said to provide the wet processor a versatile, economical nylon and on Arnel. Shades on nylon are possible through its use as a napping softener and excellent bath compatibility suggests its use in compounded recipes as well as in pure finishes.

WICATEX SOFTENER RF
(Wica)
A white flowable paste, cationic in nature. Durability, loftiness and softness of handles are achieved from low usage. It is stated that it is highly resistant to light and heat degradation as well as exhibiting minimum or no effect on dyed shades.

WIXYN AO
(Wica)
A low-foaming, nonionic wetting assistant recommended for use in the dyebath of rugs and other tufted products. Fast wetting, deep penetration and the facility of preventing rugs to float are said to be notable features.

"ZESET" LO FABRIC STABILIZER
(Du Pont)
"Zeset" LO fabric stabilizer is a special modification of "Zeset" S fabric stabilizer and has a lower free formaldehyde content. The active ingredient, other than the difference in free formaldehyde, in both products is the same. Fabric finished with "Zeset" LO has improved resistance to the development of formaldehyde odor on storage. "Zeset" LO is said to meet the needs of finishers who require the lowest possible odor from formaldehyde evolved on storage of finished fabric. Because of its lower formaldehyde content, "Zeset" LO is more difficult to catalyze to obtain the same degree of resistance to damage from chlorine retention obtained with finishes of "Zeset" S.

COLORING MATERIALS

ACID ALIZARINE BORDEAUX B
(Carbic-Hoechst)
The most economical red said to possess excellent fastness to light and wet properties.

AHCOVAT* PRINTING VIOLET 4R PASTE
AHCOVAT* PRINTING NAVY BLUE XSA DOUBLE PASTE
AHCOVAT* PRINTING GREY B PASTE
AHCOVAT* PRINTING GOLDEN YELLOW GX DOUBLE PASTE
AHCOVAT* PRINTING ORANGE R PASTE
AHCOVAT* PRINTING PINK FF PASTE
AHCOVAT* PRINTING BLUE 2BD DOUBLE PASTE
AHCOVAT* PRINTING OLIVE GREEN BL PASTE
(Arnold, Hoffman)
These additions to the Ahcovat range of dyes for printing have been developed using the following factors as desirable features of accepted printing vat colors:
—fluid, non-settling, non-drying pastes
—freedom from color specks when printing very pale shades
—control of particle size to ensure optimum brightness and high visual yields
—balanced additions of additives to maintain high printing efficiencies under a wide variety of printing, drying and aging conditions.

*Registered trademark

ALCIAN* BLUE 2GX
ALCIAN* BLUE 5GX
(Arnold, Hoffman)
These two new members of the Alcian dyeing and printing range are redder than the older members—Alcian Blue 7GX and 8GX types—and therefore considerably increase the range of shades which may be produced. The Alcians are said to produce durable wash-fast shades on cotton yarns and fabrics.

*Registered trademark

ALIZARINE BRILLIANT SKY BLUE RW
(Verona)
A new Alizarine Brilliant Sky Blue R type said to possess improved light and particularly superior wet fastness properties, very good solubility and good leveling properties. Recommended for bright shades on slubbing, knitting and hosiery yarns. Due to its high affinity from a neutral bath, Alizarine Sky Blue RW is also recommended for the dyeing of union material, silk and half silk.

ALUMINUM EXTRA BRILLIANT #11
(Atlantic Metals)
An unusually brilliant aluminum textile powder for machine printing.

AMACEL* DEVELOPED BLACK 3BS
(American Aniline)
An added black to the line of acetate developed colors especially designated to produce excellent blue blacks on nylon and Dacron and also producing midnight navy or black on acetates depending on the percentage used. The chief characteristic of this color is said to be its excellent fastness to water and wet laying up. This product, particularly in combination with Napthol AS-D, produces true blacks on synthetic fibers such as Dacron and Arnel.

*Registered trademark

AMACEL* NAVY BLUE MG
(American Aniline)
An addition to the line of acetate colors especially designated to produce economical shades of navy on acetate fabrics both in jig dyeing and on the box. It can also be used on nylon and on Arnel. Shades on nylon are somewhat greener than on acetate.

*Registered trademark

AMACID* ORANGE Y CONC
(American Aniline)
A very strong and economical orange with good solubility for dyeing wool in all stages of its manufacture. It is also recommended to be used for shading blacks which require jetting and as a basis for brown combination shades. It is also recommended for use in manufacture of non-grain raising stains for wood.

*Registered trademark

AMANIL* BLACK GL CONC 200%
(American Aniline)
A deep jet black economical for applications on cotton, viscose and silk. This dye may be applied on all types of equipment, for stock, yarn, package and piece goods.

*Registered trademark

AMANIL* FAST TURQUOISE LB
(American Aniline)
A water-soluble direct dyeing color for cotton and viscose rayon said to be of extreme brightness and possessing good fastness to light. The exhaust is slow, insuring level dyeing properties and requiring the use of high salt additions. When aftertreated with resin type of agents, this color is said to possess excellent wash fastness. It can be discharged white in light and medium shades.

*Registered trademark

AMANIL* NAPTHOL AS-L4G
(American Aniline)
A new nonsubstantive addition to the line of Napthols which is intended to round out the range of yellows. It is stated that it produces extremely good fastness to light lemon yellow in combination with Fast Orange RD, Fast Orange GC, Fast Red KB Supra, Fast Scarlet GG and similar salts and bases. The other properties are comparable to the range of Napthol colors.

*Registered trademark

AMANIL* SUPRA DYES
(American Aniline)
Amanil Supra Black FL Conc
Amanil Supra Grey LLG
Amanil Supra Blue LLG
Amanil Supra Blue 7GL
Amanil Supra Brown LBL
Amanil Supra Orange GLL
Amanil Supra Orange RLL
Amanil Supra Red 6BLL
Amanil Supra Rubine BBL
Amanil Supra Yellow LRL
Amanil Supra Yellow 2GLL
Amanil Supra Yellow 2RLL
Amanil Supra dyes are neutral-dyeing premetalized colors. They are said to possess high all around fastness properties on wool, nylon and silk. They exhaust and work well with each other enabling them to be used in combinations for equal penetrated and level results. Their neutral dyeing properties make them particularly attractive dyeings for mixed fibers.

*Registered trademark

AMANTHRENE* DISPERSCON* VAT POWDERS
(American Aniline)
Under this designation there have been released dispersible vat powders which, in addition to possessing unusual dispersing properties, are highly concentrated. It is stated that, as a result of these dispersion properties, these products can be considered excellent candidates for all types of application, particularly in difficult to penetrate systems such as package dyeing and beam dyeing work as well as difficult constructions as involved in high twist or tight weave. The range of colors embodies all of the desirable vat colors currently available on the market.

*Registered trademark

AMANTHRENE* EMULSO† VAT PASTES
(American Aniline)
Under this name vat dyestuff pastes have been released in a form compatible with oil-in-water emulsion vat thickeners. These dyes have been especially manufactured to give maximum yield and brightness by any of the emulsion systems currently in use. The range embodies all of the vats necessary for a complete line of application and discharge colors.

*Registered trademark
†Registry applied for

AMANTHRENE* SUPRA RED FBB DOUBLE PASTE
(American Aniline)
An addition to the company's line of vat colors intended to round out its range of vats available to the consumer. It is stated that excellent working properties under all conditions of application make it a very desirable reddening component in vat color work. This particular color is characterized by excellent dispersibility and good overall working properties.

*Registered trademark

AMAPLAST* COLORS FOR PLASTICS
(American Aniline)
Under this designation a complete range of colors for plastics is offered. It is stated that they are characterized by their excellent dispersibility in a plastic media and they are economically suited for injection or compression molding techniques. They have a very high bulk value and their retention on 325 mesh sieves may be considered minimum. Specific plastics require a selection from this group depending on their end use application.

*Registered trademark

ANSIGEN* BLACK NI DBL SOL
(Ansbacher-Siegle)
An azoic black said to possess excellent fastness to washing, dry cleaning, light, and plisse. The most important property of this product is formaldehyde resistance.

*Registered trademark

ANSIGEN* BLUE GC SOL
(Ansbacher-Siegle)
An azoic blue which will develop shades said to be of outstanding brightness and cleanliness.

*Registered trademark

ANSIGEN* BLUE GG SOL
(Ansbacher-Siegle)
An azoic blue which will develop clean green shades said to possess general all around fastness properties.

*Registered trademark

ANSIGEN* RED GNB CONC SOL
(Ansbacher-Siegle)
An azoic red which will develop bright yellow cast shades said to possess excellent all around fastness properties.

*Registered trademark

ANSIGEN* RED KB CONC SOL
(Ansbacher-Siegle)
An azoic red which will develop bright blue cast shades said to possess excellent all around fastness properties.

*Registered trademark

ANTHRASOL® DYES
(Carbic-Hoechst)
Anthrasol dyes are the water-soluble leuco esters of vat dyes. Being water soluble, they are easily applied to cellulose fibers by padding, dyeing and printing. They are readily regenerated by oxidation to the vat dyes from which they are derived. Selected Anthrasols are said to produce fast shirting shades on cotton broadcloths and on blends of Dacron and cotton, and Anthrasols dyed on wool are said to produce shades of maximum fastness.
The following Anthrasols are available:
Yellows GCN, HCG, V, Printing Yellows 13G and 4G
Golden Yellows IGK and IRK
Orange HR, Golden Orange 12R, Brilliant Orange IRK
Scarlets HB, IB, and Printing Scarlet GG
Pink IR, Brilliant Pink I3B and Red IFBB
Red Violets IRRN, IRH
Printing Violets IRR, IBBF and Brilliant Violet 14R
Blues O, O4B, O6B, O4G, IBC and Printing Blue IGG
Greens IBA, IGG, 13G
Olive Greens IB and IBB
Browns IBR, IRRD
Greys IBL, IHL, IT and Blue Black IRD
Printing Blacks IB and IGR

ARIDYE®/AQUAPRINT® GOLDEN YELLOW RF
(Interchemical)
Aridye Golden Yellow RF is a new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful as a self-shade for producing bright, golden yellow shades and in blends for formulating compound shades. Outstanding features are stated to include: good lightfastness, meeting normal dress goods requirements; excellent washfastness, passing a No. 4 wash in accordance with the AATCC Standard Test Method; excellent fastness to drycleaning, either with carbon tetrachloride or perchlorethylene. It is an excellent color for printing cotton to be plissed; it does not cut out with caustic soda. It can be employed for discharge printing since it is not affected by sodium or zinc sulfoxylate formaldehyde. Golden Yellow RF is offered also in Interchemical's Aquaprint Series. The colors in this series are applied to textiles in the form of pigmented oil-in-water emulsions.

ARIDYE® / AQUAPRINT® RED RF
(Interchemical)
Aridye Red RF is a new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful as a self-shade for producing bright, neutral reds and in blends for formulating compound shades. Outstanding features are said to include: lightfastness which meets normal drapery requirements; excellent washfastness, passing a No. 4 wash in accordance with the AATCC Standard Test Method; excellent fastness to drycleaning, either with carbon tetrachloride or perchlorethylene. This color is excellent for printing cotton to be plisséd; it does not cut out with caustic soda. Red RF is offered also in Interchemical's Aquaprint Series. The colors in this series are applied to textiles in the form of pigmented oil-in-water emulsions.

ARIDYE® / AQUAPRINT® RUBINE 5B
(Interchemical)
Aridye Rubine 5B is a new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. This color is useful either as a self-shade for producing bright, strong rubines or in blends for formulating compound shades. It is stated that the outstanding feature of Aridye Rubine 5B is its excellent fastness to drycleaning, either with carbon tetrachloride or perchlorethylene. In addition it is said to provide lightfastness which meets normal dress goods requirements and washfastness which passes a No. 4 test in accordance with the AATCC Standard Test Method. Rubine 5B is offered also in Interchemical's Aquaprint Series. The colors in this series are applied to textiles in the form of pigmented oil-in-water emulsions.

ARIDYE® / AQUAPRINT® YELLOW 3G
(Interchemical)
Aridye Yellow 3G is a new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. Aridye Yellow 3G is useful as a self-shade for producing bright, lemon yellow shades and in blends for formulating compound shades. Outstanding features are said to include: lightfastness which meets normal dress goods requirements; excellent washfastness, passing a No. 4 wash in accordance with the AATCC Standard Test Method; excellent fastness to drycleaning, either with carbon tetrachloride or perchlorethylene. Aridye Yellow 3G is an excellent color for printing cotton to be plisséd; it does not cut out with caustic soda. And, it is excellent for discharge printing since it is not affected by sodium or zinc sulfoxylate formaldehyde. Yellow 3G is offered also in Interchemical's Aquaprint Series. The colors in this series are applied to textiles in the form of pigmented oil-in-water emulsions.

ARIDYE® RED DY
(Interchemical)
A new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful as a self-shade for producing bright, yellowish red shades and in combinations for producing compound shades. Outstanding features are said to include: lightfastness which meets normal drapery requirements and washfastness which passes a No. 4 test in accordance with the AATCC Standard Test Method. In addition, Aridye Red DY passes the AATCC drycleaning test method, using carbon tetrachloride. In dark and medium shades it is suitable also to perchlorethylene; a slight loss in depth occurs in light shades. Aridye Red DY is an excellent color for printing cotton to be plisséd; it does not cut out with caustic soda. It is excellent also for discharge printing since it is not affected by sodium or zinc sulfoxylate formaldehyde.

ARIDYE® RED RB
(Interchemical)
A new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful as a self-shade for producing strong, bluish reds and in combinations for formulating compound shades. Outstanding features are said to include: lightfastness which neets normal dress goods requirements and washfastness which passes a No. 4 test in accordance with the AATCC Standard Test Method. In dark and medium shades, it is suitable to drycleaning, using the AATCC Test Method with carbon tetrachloride.

ARIDYE® SCARLET RD
(Interchemical)
A new resin-bonded pigment color formulated especially for fast-color printing cotton, rayon, acetate, nylon, Dacron, and other natural and synthetic fibers and blends. It is applied to textiles in the form of a pigmented water-in-oil emulsion. It is useful in medium-dark shades for producing yellowish reds and in long cuts for producing attractive coral shades. It can be employed also in combinations for producing compound shades. Outstanding features are said to include: lightfastness which meets normal dress goods requirements; excellent fastness to washing, passing a No. 4 wash in accordance with the AATCC Standard Test Method; excellent fastness to drycleaning, either with carbon tetrachloride or perchlorethylene. Aridye Scarlet RD is also said to be excellent for discharge printing since it is not affected by sodium or zinc sulfoxylate formaldehyde.

ARTISIL* DIRECT BLUE GREEN G
(Sandoz)
A disperse dye, recommended for production of bright blue-greens on acetate, polyester, acrylic, and nylon. It is said to exhibit good lightfastness on acetate and is stable to heat treatments used in stabilizing nylons and triacetates. Full information is offered in Sandoz leaflet T-735a.

*T M Sandoz, Inc. disperse dyestuff

ARTISIL* DIRECT YELLOW SCW
(Sandoz)
Disperse dye said to be exceptionally fast to light and washing. It is especially recommended for its favorable dyeing properties and fastness on Dacron.† It is said to possess extremely good light fastness and washability for a dispersed yellow on acetate, Arnel†, or Dacron.

†Trademarks
Dacron—DuPont polyester fiber
Arnel—Celanese Corp of America triacetate fiber

ASTRAZON BLUE FGL
(Verona)
A new homogeneous bright blue modified basic dyestuff for the dyeing of polyacrylic fibers. It offers very good wet fastness and excellent light fastness even in very light shades. Also recommended for printing polyacrylic and acetate fabrics.

ASTRAZON YELLOW 8GL.
(Verona)
A new homogeneous modified basic color producing bright greenish yellow shades for dyeing and printing polyacrylic fibers. It is stated that it is also recommended for the printing of acetate with results of excellent light and very good wet fastness.

ATLANTIC CHROME BLACK T CONC

ATLANTIC CHROME BLACK RZ CONC
(Atlantic)
Chrome colors recently added to the line.

ATLANTIC DIAZO BLACK BHGG CONC
(Atlantic)
This direct and developed dyestuff is a new purified type, said to possess a brighter greenish cast than the more common variety. All other properties are the same. It is especially useful to the leather trade for the production of deep clear navys.

ATLANTIC FAST RED FR SALT NEW

ATLANTIC FAST RED FR BASE
(Atlantic)
This new and improved fast color salt and corresponding base is useful for producing lightfast deep red tones said to have excellent dischargeability and low crocking. In combination with Naphthol AS-DB a fast to light and washing dischargeable brown is produced.

ATLANTIC NAPHTHOL AS-BCR

ATLANTIC NAPHTHOL AS-BCR 20% SOLUTION
(Atlantic)
A new nonsubstantive naphthol to produce deep browns and blacks with fast color salts and bases.

ATLANTIC PRINTING BLACK BROWN LL SOLUTION

NEUTRAZOIC BLACK BROWN LL SOLUTION
(Atlantic)
A new stabilized azoic said to have excellent light fastness, wash fastness and very good chlorine fastness. This product is especially useful for producing light browns and tans to meet high light fastness requirements. Since this product is available as a neutrazoic as well as an ordinary azoic, all types of aging facilities can be used.

ATLANTIC PRINTING GOLDEN YELLOW RL DOUBLE SOLUTION

NEUTRAZOIC GOLDEN YELLOW RL DOUBLE SOLUTION
(Atlantic)
This new stabilized azoic produces brilliant true golden yellow shades said to be formerly obtainable only by vat or soluble vat dyes. Excellent wash and chlorine fastness, as well as good light fastness, are claimed as important features.

AZOGEN BLACK CPW
(Alliance)
An azoic printing black yielding very good color value. This black is on the reddish cast. Azogen Black CPW is said to be very fast to light, formaldehyde, washing, leaching, and chlorine. One of its outstanding properties is that it fluoresces very brightly under ultra violet light.

AZOGEN BLACK SPECIAL
(Alliance)
An azoic printing black yielding very good color strength. This black is on the greenish cast. Its properties are the same as Azogen Black CPW with the exception of fluorescing under ultra violet light.

AZOGEN BROWN I NEW SOLUTION
(Alliance)
An azoic printing color yielding yellowish browns said to be of good color value. This color can be shaded with Azogen yellows, reds, and blacks to obtain practically any desired shade. Azogen Brown I New is said to have very good to excellent fastness to light, washing, chlorine, plisse, formaldehyde, and hot pressing.

AZOGEN BROWN R NEW SOLUTION
(Alliance)
A new azoic printing color yielding dark browns of the cordovan cast. This color can be shaded similar to Azogen Brown I New, and has comparable fastness properties.

AZOENE FAST COLOR BASE SOLUTIONS
(Alliance)
Are designed to simplify the preparation of diazo solutions for azo-type dyeing. These products contain protective colloids which assist in complete diazotization of the base and also serve to minimize crocking and fouling of the equipment.
Azoene Fast Garnet GBCP Solution
Azoene Fast Scarlet 2G Solution
Azoene Fast Red PDC Solution
Azoene Fast Scarlet G Solution
Azoene Fast Red 3GL Solution
Azoene Fast Red GL Solution

BASACRYL DYESTUFFS
(Putnam)
These are dyestuffs especially manufactured for use on Orlon for regular dyeing methods (ie, not pressurized).

BASOLAN DYESTUFFS
(Putnam)
This represents a range of acid colors including the fast, milling and alizarine types.

CALCOFAST* NEUTRAL YELLOW G
CALCOFAST* NEUTRAL RED 6B
(Cyanamid)
These products are metallized dyes for application to wool, silk and nylon by neutral or slightly acid dyeing procedures. Under suitable conditions they will also dye certain acrylic type fibers. They are suitable for dyeing wool stock, slubbing, tops, yarn and cloth; for dyeing silk noils, silk yarn and silk fabrics; and for dyeing nylon staple, tow, tops, yarn and cloth. They leave cotton, viscose and acetate virtually unstained, hence they are particularly useful for dyeing unions of wool and cotton, wool and viscose, wool and acetate, nylon and cotton, nylon and viscose, and nylon and acetate; where the wool or nylon is dyed and the other fibers left white or is cross dyed with suitable dyes. When used on wool and nylon material, the nylon dyes more heavily than the wool. Unions of wool and silk can be dyed a solid shade. They are also applicable for printing wool, silk or nylon. They are ideally suited for menswear, shirting, suiting, upholstery, carpet yarns and nylon thread.

*Trademark

CALCOFLUOR* WHITE RW SOLUTION
(Cyanamid)
Calcofluor White RW Solution is a level dyeing brightener substantive to wool, nylon, acetate, Orlon, Vicara, Arnel, and silk. It is equivalent in shade and strength to Calcofluor White RWS, the water-soluble powder. Its application properties are similar. When applied to the above fibers Calcofluor White RW Solution produces a bright blue fluorescence under ultraviolet light. In daylight the effect is a noticeably whiter and brighter fiber. The use of Calcofluor White RW Solution is not restricted to white goods. It enhances the appearance of prints by whitening and brightening the background. Also, it brightens pastel shades. It may be applied to raw stock, yarn, or piece goods in a supplementary application or in conjunction with other operations such as bleaching, scouring, stripping, etc. The new Colour Index designation on this product is CI Fluorescent Brightening Agent 68.

*Trademark

CALCOGENE* BLUE 6RCF SOLUTION
(Cyanamid)
This product, Old Colour Index No. 959, is known by the new color designation as Sulfur Blue 7 with the new Colour Index No. 53440 in the solution type. This product meets the wide trade demand for a sulfur dye which can make a wide range of navy shades with other sulfur black solutions such as Calcogene Black 5GCF Solution, Calcogene Black GXCF Solution and Calcogene Black RBCF Solution. It is highly recommended by the manufacturer for continuous dyeing by the pad-stream process or when dyeing stock, packages or beams as the insolubles are extremely low. This liquid type also has a decreased tendency to bronze during dyeing.

*Trademark

CALCOLOID* BLACK BNC DOUBLE PASTE
(Cyanamid)
This new CPS (controlled particle size) type of vat black, old CI 1102, is the same as the new Colour Index item known as Hue Vat Green 9, new Colour Index 59850. However, it is standardized after development with chlorine or nitrous acid in order to convert the greener self-shade to a true black. This particular product has been improved so that it produces a good union on cotton and nylon, hence it is used extensively for black cotton hose wherein nylon reinforcement is included.

*Trademark

CALCOLOID* DARK GREEN BNC DOUBLE PASTE
(Cyanamid)
This product is a CPS (controlled particle size) dye. It is most economical for producing dull green shades or as a green shade component in compound shades where fastness to chlorine is not important. This product, old CI No. 1102, is the same as new CI designation Vat Green 9, No. 59850. This product is standardized as a self shade without the development with chlorine or nitric acid which is given when this type of dye is used as a black. This product has the main advantage of very good economics with a disadvantage of a low chlorine fastness. When subjected to chlorine there is a characteristic change in shade from green to black but without a loss of strength which is true of all dyes of this same class or Colour Index number. With the exception of chlorine fastness it is adequate for purposes where very good but not outstanding fastness is required, such as dress goods, colored effects in fabrics woven from previously bleached yarns and colored effects on fabrics woven from natural yarns which do not undergo subsequent bleaching.

*Trademark

"CAPRACYL" BLUE 3G
(Du Pont)
"Capracyl" Blue 3G is recommended by the manufacturers for use on wool and nylon as a self shade, as well as in the production of bright blue and blue-gray shades on materials where good fastness to light and wet processing are essential. Such materials include suitings, shirtings, carpeting, automotive upholstery fabrics and the like. "Capracyl" Blue 3G is said to exhibit good resistance to steaming under pressure and is particularly useful in the continuous dyeing of wool rawstock. It possesses the same level dyeing properties and rate of dyeing as other neutral-dyeing premetalized dyes applied by recommended procedures. "Capracyl" Blue 3G has very good affinity when applied from either neutral or slightly acidic dyebaths. However, exhaustion of the dye in heavy shades is enhanced by the addition of small amounts of acetic acid to the dyebath toward the end of the dyeing cycle. "Capracyl" Blue 3G builds up well and is resistant to demetalization by commercial sequestering agents. On either nylon or wool the color changes greener in shade when exposed under yellow incandescent light.

"CAPRACYL" OLIVE GREEN B
(Du Pont)
"Capracyl" Olive Green B is especially recommended for use as the base component in producing shades of taupe, olive and gray on both wool and nylon. This new dye is said to exhibit exceptionally good fastness to light and wet processing tests and to be of interest for application to automotive fabrics, suitings, shirtings, carpetings and similar items that require good fastness properties. "Capracyl" Olive Green B exhibits good affinity for both wool and nylon from neutral or mildly acidic dyebaths. Exhaustion of the dye in heavy shades is more efficient

when small amounts of acetic acid are added to the dyebath toward the end of the dyeing cycle. "Capracyl" Olive Green B dyes at a rate similar to other dyes in the class, exhibits good buildup and resists demetalization by commercial sequestering agents. Dyeings of the color change considerably redder in shade under yellow incandescent light.

"CAPRACYL" RED G
(Du Pont)

"Capracyl" Red G produces brighter, yellower shades of red than previously obtainable with either "Capracyl" Red BB or "Capracyl" Red B. It is recommended for application to all forms of wool and to filament and spun nylon as a self shade or as a component in combinations of tan, brown or gray. It is stated that "Capracyl" Red G should prove useful in the continuous dyeing of wool rawstock because of its good stability to steaming under pressure. This new dye has very good affinity for both wool and nylon from neutral or slightly acidic dyebaths. In heavy shades, the addition of small amounts of acetic acid toward the end of the dyeing cycle aids in exhaustion of the dye. It is stated that it exhibits good level dyeing properties, has a dyeing rate comparable with other "Capracyl" dyes, possesses good buildup properties, and exhibits resistance to demetalization by most commercial sequestering agents. Dyeings of "Capracyl" Red G change yellower in shade under yellow incandescent light. "Capracyl" Red G stains attached effect fibers similar to the other dyes in the same class.

"CAPRACYL" YELLOW RN
(Du Pont)

A new neutral dyeing premetalized dye of interest for use in producing economical brown and black shades that possess good general fastness properties. "Capracyl" Yellow RN has good affinity for both wool and nylon from neutral or slightly acidic dyebaths and exhibits good level dyeing properties when applied by the methods recommended for neutral dyeing premetalized types. It has a dyeing rate similar to other dyes in the same class, possesses good buildup characteristics and exhausts well. Dyeings show a red shade change on exposure in incandescent light.

CARBON BLACK BVS PASTE
(Arnold, Hoffman)

A pigment in paste form for use in dope dyeing of viscose rayon. It produces rich bluish black shades said to be of very high fastness.

CHLORAMINE LEATHER BLACK BHA CONC
(Sandoz)

A bloomier black for leather than Chloramine Black BH. Especially introduced for suedes which are colored by diazotization and development of the shade.

CHLORANTINE* FAST BLUE FLL
(Ciba)

This direct dye yields a rich medium blue said to be of good light fastness, especially on rayon stock, yarn and piece goods. Aftertreatment improves wet fastness and may be combined with urea-formaldehyde resin finishing. Suited for full shades of blue economically; reserves acetate and nylon; light staining on wool and silk.

*Registered trademark

CHLORANTINE* FAST GREEN F2GLL
(Ciba)

The bright pleasant green shade of this new member of the Chlorantine direct-dyeing group exhibits very good light fastness on cotton and viscose rayon. Provides level unions on cotton/rayon combinations. Well suited to dyeing, padding and package machine application; compatible with anti-crease finishing and aftertreating with copper compounds.

*Registered trademark

CHLORANTINE* FAST ORANGE HBLL
(Ciba)

Produces an economical bright orange shade when direct-dyed on rayon or cotton.

*Registered trademark

It is stated that it has unusually good light fastness and is an excellent orange element in fast shades. Especially suited for dyeing rayon piece goods, with or without resin aftertreatment. Aftertreatment improves wash fastness with minimum effect on light fastness.

CHLORANTINE* FAST YELLOW H2RL
(Ciba)

Imparts a warm yellow color to rayons and cottons in direct dyeing. It is said to offer exceptional money value and light fastness. Particularly suited to dyeing rayon piece goods, with or without resin aftertreatment. Aftertreatment, including urea-formaldehyde resin finishing, improves wash fastness with minimum effect on light fastness.

*Registered trademark

CIBACETE* TURQUOISE BLUE 2G
(Ciba)

This new disperse dye imparts brilliant greenish blue shades on acetate, nylon, Orlon, Arnel and Acrilan. It can be used as a printing and as a dyeing type; exhibits good dispersion and no sublimation. Light fastness on Orlon and Arnel is very good, though somewhat lower on spun nylon and Acrilan.

*Registered trademark

CIBACRON* FIBER-REACTIVE DYES
(Ciba)

The all-new Cibacron dyes, in eight initial shades, present a radically different means of dyeing and printing cotton, rayon and silk through chemical reaction with the fiber. These dyes are not applied by physical adsorption or mechanical retention as are other groups, but the Cibacrons represent a new principle in that they react with the fiber itself.

The Cibacron dyes are water-soluble products with no affinity for textile fibers. They are best applied by padding or printing, followed by fabric drying and dye fixation. Fixation of the dye takes place in an alkaline salt bath in which a chlor-atom of the dye molecule reacts with the hydroxyl radical of the cellulose. Subsequent washing removes any unbound dye on the fiber to yield clean shades said to be of very good fastness.

Cibacron dyes can be applied by various methods, all of which, in general, comprise the three operations of (a) padding and drying, (b) fixation and (c) removal of chemically unbound dye. The following methods work well in practical usage: (1) pad-steam method, (2) pad-jig method, (3) pad/thermo fixation method, (4) pad-roller method and (5) single pad/steaming method. Excellent results are obtained in roller and screen printing.

Colors of available dyes range from yellow through orange, red and blue to turquoise. These colors are exceptionally brilliant and beautiful and are said to exhibit light, wash and crocking fastness of the highest order. The group includes the following dyes:

Cibacron Brilliant Yellow 3G, Cibacron Yellow R, Cibacron Brilliant Orange G, Cibacron Scarlet 2G, Cibracron Brilliant Red 3B, Cibacron Rubine R, Cibacron Blue 3G, Cibacron Turquoise Blue G.

*Registered trademark

CIBALAN* NAVY BLUE RL CONC
(Ciba)

This is claimed to be the first true navy blue in a premetallized dye. It offers a clean medium tone of navy for light or heavy shades where very good fastness, particularly to light, and economy are required. Highly recommended by the manufacturers for dyeing woolens, worsteds, spun and filament nylons at all processing stages. Dyes level, either as a base color or in shading.

*Registered trademark

CIBANONE* COPPER RED R PASTE
(Ciba)

An anthraquinone vat dye yielding an attractive brick red shade said to possess excellent fastness to weathering. It is stated that it provides level dyeing of good color strength and penetration, fast to light, washing and perspiration. The clean attractive shade and strong weathering fastness make this new color particularly interesting for dyeing fabrics for deck and terrace furniture, awnings, etc.

*Registered trademark

CUPROPHENYL* BLUE 3 GL
CUPROPHENYL* GREEN 2 BL
(Geigy)

Cuprophenyl Blue 3 GL is said to be a level dyeing dyestuff of a bright greenish cast with a good reserve of acetate.

Cuprophenyl Green 2 BL is offered by its manufacturer as a rather bright, bluish shade of green. It is especially recommended where a high degree of light fastness is desired as it is claimed by the manufacturer to be one of if not the fastest to light direct greens yet marketed.

The Cuprophenyls are direct dyestuffs which when aftertreated with copper sulfate and acetic acid are said to possess as a group the washing wet and perspiration fastness of developed colors with far superior light fastness. They are said to be well adapted for use with anti-crease resins and/or coppered fixatives.

*Registered trademark

DEORLENE* YELLOW G
(Ciba)

Improved basic dye for acrylic fibers. It is said to impart a bright medium yellow shade of excellent fastness to light and washing, with minimum staining of wool and cellulosic fibers. Is applied from acetic acid bath, exhausting at the boil.

*Registered trademark

DIAZAMINE BLUE BRG CONC
(Sandoz)

Developed with beta naphthol, this dye gives a blue which is desirably greener in shade, on viscose, than previous blues of this type. Discharges a pure white by alkaline and neutral discharge methods. Fastness to light and washing are said to be unusually high for a diazotized and developed color. See Sandoz leaflet T-736a for data.

DIAZAMINE SCARLET RPC CONC
(Sandoz)

An extremely bright red for diazotization and development. It is said to combine good wet fastness with outstanding dischargeability. Perfect acetate reserve. See Sandoz leaflet T-7178a.

DIAZO FAST COLOR SALTS
(Putnam)

A full range of fast color salts for use in conjunction with the Naphthol AS series.

DIAZO FAST GREEN 2GL
(Ciba)

When direct-dyed on cotton or rayon this dye yields a teal blue shade said to possess good light fastness. Development with Yellow Developer C produces a strong green color said to be of excellent light fastness and good wet fastness. The color dyes level and discharges to a clean white.

DIRECT FAST ORANGE EGLL
(Berkshire)

A new addition to the line of direct colors for cotton and rayon, this orange is reported as strengthening the range particularly where fastness to light is important. It is reported as a level dyeing color having excellent solubility properties. A good discharge is claimed for the color.

DIRECT FAST TURQUOISE 8GLL
(Berkshire)

This new direct color is the brightest blue in the entire line. It is reported as having excellent solubility and commercial fastness. It is reported as unequaled for bright blue shades on cotton or rayon.

DU PONT "NAPHTHANIL" RED B BASE
(Du Pont)

Du Pont "Naphthanil" Red B Base can be used to produce many popular shades that are said to possess very good fastness to light

and washing on cotton and rayon. It is particularly recommended by the manufacturers for producing black shades on dress goods, sportswear and other materials that are subjected to peroxide bleaching, frequent laundering or that require good lightfastness. The application of Du Pont "Naphthanil" Red B Base follows the usual method for applying azoic dyes. The properly prepared material is impregnated with the desired Du Pont "Naphthanil" prepare which is then coupled with a diazotized solution of Du Pont "Naphthanil" Red B Base. After coupling takes place, a soaping at the boil (except with Du Pont "Naphthanil" SW couplings which should be scoured at 160°F.) develops the true shade and insures maximum fastness properties.

DU PONT "NAPHTHANIL" RED KBO BASE
(Du Pont)

An easy-to-handle product that remains pourable at ordinary temperatures. It is the free base of Du Pont "Naphthanil" Red KBH and has similar fastness properties. Du-Pont "Naphthanil" Red KBO Base is especially recommended for producing bright red shades on toweling and similar items when coupled with Du Pont "Naphthanil" SW.

DUROLAN BLACK WA
(Berkshire)

This new addition to the range of metalized chrome dyes for wool and for nylon produces a bloomy shade of black which is reported to be excellent to washing and to light.

DUROLAN BLUE 2G
(Berkshire)

This is a new addition to the range of metalized chrome dyes for wool and nylon. The color produces greyish blue shades which are repored to be excellent to washing and light.

DUROLAN NEUTRAL ORANGE R
(Berkshire)

A new orange of the premetalized neutral dyeing type for wool and nylon. It is claimed to produce shades which exhibit excellent fastness to light and washing.

DUROLAN NEUTRAL YELLOW NW
(Berkshire)

A new premetalized neutral dyeing yellow for wool and nylon. This color is reported as excellent in fastness to light and washing.

DUROLAN PINK B
(Berkshire)

A new metalized chrome color for wool and nylon. Excellent fastness to washing and light are claimed.

DUROSOL YELLOW GOO
(Berkshire)

This new acid yellow is reported as an excellent color for application neutral to wool, silk and nylon. It is also reported of interest for printing silk. Excellent solubility and good level dyeing properties are also claimed.

FAST BLUE B BASE (DIANISIDINE BASE-DFB GRADE)
(Carwin)

A dustless, dispersible Fast Blue B base of nearly 100% strength that will tetrazotize rapidly and completely with no residual insoluble matter. It is said to be ideal for package dyeing where fast color base can be used.

FAST COLOR BASES
(Carbic—Hoechst)

A complete line of Fast Color Bases including the following:
- Yellow GC
- Orange GC, GR and R
- Bordeaux GP
- Garnet GBC, GC
- Reds B, FG, FR, GG, GL, 3GL Base Special
- Reds GTR, ITR, KB, KL Base Special
- Reds RBE, RC, RL, TR, SW Base Special
- Scarlets G, GGS, LG, R, RC, TR
- Corinth LB
- Violets B and F
- Blues B, BB, RR
- Dark Blue RT and Variamine Blue FGC
- Fast Brown V
- Fast Black B

FAST COLOR SALTS
(Carbic—Hoechst)

A complete range of Fast Color salts including the following:
- Fast Yellow Salt GC
- Fast Golden Orange Salt GR
- Fast Orange Salts GC, GGD, GR, LG, RD, RDA
- Fast Bordeaux Salts BD, GP, OL
- Fast Garnet Salts GBC, GBC supra, GC
- Fast Red Salts AL, AL supra, B, B supra, FG, GG, GL, 3GL, GTR, ITR, ITR supra, KL, RC, RL, RL supra, TL
- Fast Red Salt FRN (non-dusting-patented)
- Fast Scarlet Salts, AFA, G, GG, GG supra, LG, R, VD
- Fast Corinth Salts LB and V conc
- Fast Violet Salts B and F
- Fast Blue Salts B, BB, RR, VB, FVGC, VRTN, VBN
- Fast Navy Blue Salt RA and Dark Blue Salt R
- Fast Blue Green Salts B and G
- Fast Brown Salts RR, V and VA
- Fast Black Salts ANS, B, BTL, G and K

FORMALDEHYDE YELLOW GR PR. 439
FORMALDEHYDE YELLOW 2G PR. 439
(Berkshire)

These two yellows represent new additions to the line of aftertreatable direct colors for cotton and rayon. They are reported to exhibit good solubility properties and to be level dyeing. They are claimed to exhibit good wash fastness as aftertreated with either formaldehyde or urea formaldehyde. These colors are reported to leave acetate white and to be excellent to discharge. The 2G type as might be expected is similar to the GR on properties but is greener in shade and is reported as the brightest of its type on the market.

GENAFAST* YELLOW S
(General Dyestuff)

A new straight, chromable, direct dyestuff that has been found useful for all general leather dyeing. It reportedly gives full, reddish-yellow shades on both chrome leather and vegetable-retanned chrome leather which are distinguished by very good fastness to drycleaning. This leather color has good solubility in water, dyes level, and gives solid colors on grain leathers.

*Trademark

HELIOGEN* BLUE BLE in DOP
(General Dyestuff)

The first of a series of new flushed-pigment products, which is a dimensionally stable phthalocyanine blue flushed in dioctyl phthalate (DOP). It reportedly displays outstanding lightfastness besides the important feature of noncrystallization in aromatic solvents.

*Registered trademark

HOLLAND HIGH SOLIDS WATER DISPERSIBLE PASTES
(Holland)

These products are extremely fine dispersions of organic pigments and cover a wide range of shades. They are claimed to be extremely useful as a colorant wherever aqueous binder systems are used and are compatible with most oil-in-water emulsions. They have been used successfully for pigment printing and padding of textiles, water emulsion paints, flexographic inks and paper coating. The following products are available:
- Permanent Yellow 10G—WDY-1 (Hansa Yellow)—70% total solids
- Permanent Yellow G—WDY-2 (Hansa Yellow)—62% total solids
- Scarlet Red L—WDR-3 (a naphthol red)—58% total solids
- Toluidine Toner Y—WDR-4—55% total solids
- Pigment Green B—WDG-5—40% total solids
- Permanent Green Toner—WDG-6 (phthalocyanine green)—54% total solids
- Permanent Blue Toner—WDB-7 (phthalocyanine blue)—50% solids
- Naphthol Dark Red-WDR-9—50% solids
- Lithol Red Dark—WDR-11—52% solids
- Red Lake C—WDR-12—55% solids

HOSTAGEN® DYES
(Carbic—Hoechst)

Hostagens are stabilized-azoic combinations which form insoluble azo dyes when printed or padded on cellulose fabrics after treatment in acid vapors. They provide a wide range of bright and economical shades of yellow, orange, scarlet, red, bordeaux, violet, blue, brown and black which are said to meet stringent consumer fastness requirements. When printed alongside Anthrasols (leuco vat esters) or Hostatex and Hostatone pigment colors a complete range of shades for dress goods printing is available.

Hostagen dyes are marketed as concentrated powders, single solutions and double solutions and the latter are said to be suitable for emulsion printing. They are applied to cotton fabrics in the usual manner by machine or screen printing. An acid aging forms the insoluble azo dye in the fabric.

The principal Hostagens include the following:
- Yellow GN, GS, GFA
- Golden Yellow N, IFG
- Orange R
- Scarlet SNN, SFA
- Red GNN, GNBS, GFA, BFA, BR, RN, ITR
- Brilliant Red HBL, H2B, 2B
- Bordeaux BN
- Violet B
- Blue G, GFA, 2G, 2GL, GB, R, 2B
- Green B Extra
- Brown IPT, IPH, IB
- Black Brown IT
- Black BRN, RB, PJN, CG, ABN, HG, R

HOSTATEX® COLORS
(Carbic-Hoechst)

Hostatex pigment colors are recommended for fast color printing on cotton, synthetic and on Fiberglas fabrics from an oil-in-water emulsion, and they are said to be suitable for both machine and screen printing. Since Hostatex pigment colors are water dispersible, they are easily cleaned from print rollers, screens and other equipment. Modifications in print formulations make it possible to print Hostatex colors as resists under pad Aniline Black thus creating many new and interesting style designs.

Hostatex colors provide a wide range of bright and economical shades which are said to meet stringent consumer fastness requirements. After printing and drying, the printed fabrics are heat cured to polymerize the bonding resins. When printed alongside Hostagens (stabilized azoic dyes) and Aniline Black, the Hostatex colors are said to improve in wash and crock fastness with the acid or neutral aging necessary to develop these colors and subsequent heat curing is said to produce maximum fastness.

The new Hostatex colors include the following:
- Yellow AG, A2G
- Blue AG, A2G, Royal Blue AR, Navy ANR
- Green AK, AB
- Orange AR, AY
- Brown AK, AN, AR
- Red AR, AB, A2B
- Violet A2R, A3R, A4B
- Black A2K

HOSTATONE® COLORS
(Carbic-Hoechst)

Hostatone colors are improved resin-bonded pigments recommended for fast color roller printing on cotton and synthetic fibers and are applied to textiles in water-in-oil emulsions. They provide a range of bright and economical shades which are said to meet stringent consumer fastness requirements.

After machine printing in the usual manner, the printed fabrics are heat cured to polymerize the bonding resins. When printed alongside Hostagens (stabilized azoic dyes) and Aniline Black, the Hostatones are often improved in fastness by the acid or neutral aging necessary to develop these colors, and in most instances subsequent heat curing will provide maximum fastness.

The Hostatone colors include the following:
- Yellow O2G
- Blue OG
- Blue O2G

Navy Blue ORN
Green OB
Orange OR
Orange O3R
Brown OK
Red OR
Red OB
Red O2B
Voilet O3R
Violet O4B
Voilet O2R
Black OJB

HOSTAVAT® DYES
(Carbic-Hoechst)

Carbic's new series of vat dyes for dyeing and printing include the following:
Yellow GC Paste for dyeing and printing
Golden Yellows IGK and IRK double pastes for printing
Brilliant Orange GR and RR ultrafix pastes for printing
Brilliant Orange GR Powder fine, supra power and double paste extra fine for dyeing
Orange R Paste for printing
Scarlets G, 2G, 2BAP and 3B pastes for printing
Scarlets GG and H4G ultrafix pastes for printing
Scarlet GG powder fine, supra powder and double paste fine for dyeing
Brilliant Pink R paste for printing
Red 5BP double paste for printing
Red Violets 2RN and RH pastes for printing
Bordeaux RR ultrafix double paste for printing
Bordeaux RR powder fine and double paste extra fine for dyeing
Printing Blues B, GG, HR and HFG ultrafix pastes
Blue 4BRC paste for printing
Blues HCGK, HCRK, HCBG powders for dyeing
Brilliant Green H3G ultrafix paste for printing
Brilliant Green H3G powder and double paste extra fine for dyeing
Copper HR powder fine for dyeing
Copper HGR ultrafix paste for printing
Brown HRR paste extra fine for dyeing
Printing Browns HRR and 5R ultrafix pastes
Brown 2R paste for printing
Red Brown HBR powder fine for dyeing
Printing Grey HGL ultrafix paste
Grey HBR powder fine and supra powder for dyeing
Printing Blacks B, BL and TL ultrafix pastes
Deep Black GN paste for printing

INDANTHRENE* YELLOW H EXTRA DOUBLE PASTE FINE

INDANTHRENE YELLOW HGN EXTRA DOUBLE PASTE FINE
(General Dyestuff)

These two new chemically related anthraquinone vat yellows, said to be of very good to excellent general fastness properties, are manufactured to supplement the chemically similar but not identical Indanthrene Golden Yellow GKA for printing cotton and rayon. Both the new vat yellows are distinctly redder in shade than this older product, considerably faster to washing, but approximately equal to it in printing strength.

*Registered trademark

INDIGOSOL® DYES
(Carbic-D&H)

New additions to this line of water-soluble leuco esters of vat dyes are the following:
Indigosol Yellows R and 2GB
Indigosol Golden Yellow AR
Indigosol Orange I8RA
Indigosol Red Violet IRRL
Indigosol Violet 15R
Indigosol Browns I3B and IRV(F)
Indigosol Grey I3F

INTERCHEM® BLACK JN
(Interchemical)

A new highly dispersed acetate dye developed specifically to met the demand for a low cost, direct-dyeing black with good tinctorial value on acetate. It can be applied either on jigs or boxes at temperatures of about 185°F, or higher, with good exhaustion, pile on, and leveling properties. An important feature of Interchem Black JN is that it builds up from a grey which enables dyers to watch the progression of their shade and more accurately control the final shade.

INTERCHEM® NAVY JB
(Interchemical)

A new highly dispersed acetate dye developed specifically to meet the demand for a low cost, direct-dyeing navy on acetate. This dye can be employed for producing a wide variety of navy shades. It builds up from a light blue to a navy which enables dyers to watch the progression of their shade and more accurately control the final shade. Interchem Navy JB can be applied either on jigs or boxes at temperatures of about 185°F or higher, with good exhaustion, pile on, and level dyeing properties.

INTERCHEM® POLYDYE VIOLET B
(Interchemical)

A new dyestuff developed specifically for dyeing Dacron and Dacron blends. It is useful either as a self-shade for producing bluish violet shades or in blends for producing compound shades. The shades produced are said to possess good fastness to light, washing, and sublimation. Interchem Polydye Violet B can be applied to Dacron either by carrier dyeing techniques or high temperature methods.

IRGALAN* NAVY BLUE 5 RL
IRGALAN* RED 4 GL
IRGALAN* BORDEAUX GRL
IRGALAN* BLACK RBL
IRGALAN* BLACK GBL
IRGALAN* BROWN BL
(Geigy)

The Irgalans offer an entirely new approach to the dyeing of wool in that they can be applied in shorter periods of time from a neutral bath with a minimum of boiling, and in many instances, it is claimed, with no boiling at all while still producing extremely level results, plus thorough penetration on the lightest of fabrics. It is stated that, for all around fastness, the Irgalans will approach or exceed the fastest of wool colors used heretofore. As well as being almost identical to each other with respect to fastness, the Irgalans also have almost identical working properties —that is, they draw and exhaust in combination like a homogeneous dyestuff. With the Irgalans, it is said, tippy wool and blends of various grades of wool can be dyed evenly to a solid shade. Irgalans are also recommended for the coloring of filament and spun nylon in all forms, application printing on cotton fabrics, coloring of cellulosic acetate by the solvent method, and coloring of silk.

Irgalan Navy Blue RL produces a strong reddish shade of navy blue on wool and pure silk. Because of a tendering toward bronzing, it is not recommended for use on polyamide fibers.

One of the fastest to light of the Irgalans, yellowish-red Irgalan Red 4GL is recommended as a shading element as well as a self shade.

Irgalan Bordeaux GRL in addition to possessing a brighter shades than the older Irgalan Bordeau 2 BL has a slightly higher light fastness on nylon.

With the introduction of Irgalan Black RBL and Irgalan Black GBL, it is now possible to obtain black shades of various casts possessing all the advantages offered by the Irgalan series. In addition to being used on wool, nylon and silk they are specially advantageous for critical dyeing operations such as top, package, yarn and piece goods dyeing.

Irgalan Brown BL will be preferred when redness in artificial light is required. It is specially recommended for the dyeing of wool and staple or filament nylon at all stages of processing. It is also said to be ideally suited for the dyeing of these fibers in blends with cellulosics or the newer synthetics.

*Registered trademark

IRGANOL* GREEN 2 GLS
(Geigy)

A new nonmetalized yellowish shade of green said to possess light and fulling fastness superior to Cyanine Green. The Irganols as a range possess working and fastness properties similar to those of the Irgalans and being as a group brighter in shade are used in conjunction with the Irgalans to extend the range of shades.

ISOLAN* BROWN 3RLS
(Verona)

A new homogeneous neutral dyeing premetalized dyestuff said to possess very good light and wet fastness, good solubility and leveling properties. Also recommended for the dyeing of silk, nylon and unions.

*Registered trademark, Bayer Leverkusen

ISOLAN* BROWN TLS
(Verona)

A new homogeneous neutral dyeing premetalized dyestuff producing olive brown shades said to be of very good light and wet fastness, outstanding solubility and good leveling properties. An excellent shading component for fashion shades. Also recommended for the dyeing of silk, nylon and unions.

*Registered trademark, Bayer Leverkusen

ISOLAN* GREY BBS
(Verona)

A new homogeneous neutral dyeing premetalized dyestuff producing blue-grey shades said to be of good to very good light and wet fastness, good solubility and leveling properties. Also recommended for the dyeing of silk, nylon and unions.

*Registered trademark, Bayer Leverkusen

LANASYN* BORDEAUX GRL
(Sandoz)

Neutral dyeing premetallized dye for wool, nylon, silk. Light fastness is said to be excellent on wool, even higher on nylon. Water fastness meets automotive requirements. Excellent ratings are said to be obtained for crock tests on wool and nylon. Superior performance in alkaline milling. All information detailed in Sandoz leaflet T-723a.

*T M Sandoz, Inc. neutral dyeing premetallized dyes

LANASYN* BRILLIANT YELLOW 5GL
(Sandoz)

Used with neutral dyeing premetallized dyestuffs on wool, silk, or nylon, this brilliant color is particularly recommended for formulation of bright green shades. Fastness properties on woolens and worsteds are said to meet requirements for men's and ladies' wear. No alteration of shade in carbonizing. Levelness suitable for piece dyeing. Complete properties given in Sandoz leaflet T-734a.

LANASYN* BROWN 2RL
(Sandoz)

Neutral dyeing premetallized brown recommended by the manufacturers for: production of good unions on silk and wool by common salt method; greenness of shade in artificial light; superior fulling; high resistance to effects of iron and copper; desirable orange overhand in daylight; superior fastness to light and to decatizing. See leaflet T-6173a for complete properties.

LEVAMIN* YELLOW GW, LEVAMIN* RED GW, LEVAMIN* BLUE GW
(Verona)

A new series of homogeneous wool dyestuffs said to possess good to very good light and wet fastness properties and good solubility. Due to very similar dyeing behavior, these three types are particularly suited for compound shades on knitting and hosiery yarn as well as piece goods. Also recommended for the dyeing of hats, silk and union fabrics.

*Registered trademark, Bayer Leverkusen

LEVANOL* BRILLIANT RED 3BW
(Verona)

A new bright bluish-red homogeneous milling dyestuff for wool said to possess good light and wet fastness. Especially recommended for the dyeing of slubbing, knitting and hosiery yarns, silk and union fabrics.

*Registered trademark, Bayer Leverkusen

LEVANOL* FAST RED RX
(Verona)
A milling dyestuff for wool said to offer especially good money value and to possess good wet fastness. Especially recommended for the dyeing of slubbing, knitting and hosiery yarns, silk and union fabrics.

*Registered trademark, Bayer Leverkusen

LUMATEX PIGMENTS AND BINDERS
(Putnam)
These represent water phase pigment dispersions and bonding agents for use in printing as well as padding. These pigments produce prints and dyeings said to be of excellent fastness properties on all textiles.

LUMICREASE*/CUPROFIX* BORDEAUX 3LR
(Sandoz)
Direct dye with the fastness to light, perspiration, and crocking required for automotive and decorative fabrics. Good wet fastness is improved by Cuprofix*, Sandofix* and/or resin aftertreatment. The dye gives a perfect acetate reserve and produces satisfactory unions on cotton/viscose blends. See Sandoz leaflet No. 1284/57 for detailed data.

*T M Sandoz, Inc

LUMICREASE*/CUPROFIX* GREY 3LBN Pat
(Sandoz)
Bluish-grey direct color said to possess maximum fastness required for automotive and decorative fabrics. Exceptional improvement in dyeing properties. Wet fastness may be further improved by aftertreatment with Cuprofix, Sandofix, and/or standard UF resin finishing. Stable to hard water; level dyeing; good reserve of nylon and acetate. Data available in Sandoz leaflet No. 1297/57.

LUMICREASE*/CUPROFIX* GREY 3LR Pat
(Sandoz)
Direct grey said to be very fast to light water, and perspiration. Ratings after treatment with UF, Cuprofix, or Sandofix are high. Outstanding solubility, making it particularly good for pad dyeing. Recommended for automotive and decorative fabrics. Complete data in Sandoz leaflet No. 1306/57.

LUMICREASE*/CUPROFIX* NAVY GLA paf
(Sandoz)
All the excellent fastness properties required of a direct color for automotive and decorative fabrics are claimed. Stable to anticrease finishing. Suitable for package dyeing. Full details in leaflet No. 1325/57.

LURANTINE DYESTUFFS
(Putnam)
This is the generic name for direct dyestuffs, including the range of fast to light and developed types.

MAXILON* BLUE GLA
MAXILON* BLUE RLA
MAXILON* RED BL
(Geigy)
The Maxilons are a new series of cationic (basic) dyestuffs developed for application to Orlon, Acrilan and other acrylic fibers. The two blues produce clear, bright shades—the "GLA" being on the green cast and holding its shade well in artificial light while the "RLA" is a redder product which goes even redder in incandescent light. Their drawing properties are practically identical, and using in combination, a wide range of blue shades is possible.

Maxilon Red BL produces a somewhat bluish shade of red with good brightness. For all around utility use, the shade is claimed to be ideal, being in its class one of the few true reds yet developed.

The three Maxilons thus far produced—others are in the research state—are said to distinguish themselves in two ways:

1. Exceptionally good light fastness approaching 8 in all depths from light pastels to full, heavy shades.
2. Good buildup properties maintaining cast from fractional to nigh percentage depths.

The washing, perspiration and other wet fastness properties are excellent.

*Registered trademark

MICROFIX* (pigment-resin series) DYES
(Ciba)
The Microfix Process of pad dyeing utilizes a range of sixteen water-insoluble anthraquinoid colors in especially prepared pigment paste form. The colors are applied to the fabric in light and medium shades in conjunction with three synthetic resin finishes, Microfix Binders I, II and III. The fabric is dried and the finish cured at elevated temperatures to dye and finish concurrently. It is claimed that all-round fastness of the dyeings is excellent; shades are even and well penetrated in fabrics of all weights.

Since the Microfix Process does not depend on dye affinities of the fibers involved, the procedure is particularly useful for obtaining level union dyeings on blends of natural and synthetic fibers. This eliminates the need for complex dyeing procedures normally required in some synthetic blends or natural/synthetic combinations. The process is compatible with a number of softeners and other finishing agents, permitting modification of the finish being run. Microfix dyes are available in the following colors:

Microfix Golden Yellow G Paste
Microfix Yellow GR Paste
Microfix Yellow 2R Paste
Microfix Yellow 4R Paste
Microfix Orange 5R Paste
Microfix Bordeaux 2B Paste
Microfix Red R Paste
Microfix Violet 3R Paste
Microfix Blue R Paste
Microfix Brill Blue 4G Paste
Microfix Brill Green G Paste
Microfix Olive B Paste
Microfix Olive Green G Paste
Microfix Brown 3B Paste
Microfix Grey G Paste
Microfix Grey R Paste.

*Registered trademark

MONOLITE* FAST BLUE 2RVS PASTE
(Arnold, Hoffman)
A very bright reddish blue pigment for incorporation into viscose rayon dope. It is said to be characterized by its extremely good fastness and it produces bright royal shades.

*Registered trademark

MONOLITE* FAST CARMINE BVS PASTE
(Arnold, Hoffman)
A bright bluish-red shade said to possess excellent fastness to light, and to bleeding in various solvents. Monolite Fast Blue BVS is especially standardized for incorporating in viscose dope.

*Registered trademark

NAPHTANILIDES
(Putnam)
These represent a full range of products of the Naphthol AS series.

NAPHTHOL AS-BC
(General Dyestuff)
A new nonsubstantive naphthol for the padding of low-cost blacks of good washfastness and moderate lightfastness on cotton and rayon. It may also be used for very deep browns of similar properties.

NAPHTHOLS
(Carbic-Hoechst)
A complete range of 38 Naphthols including the following:
AS ultra, AS-AG, AS-AM, AS-BG, AS-BI, AS-BO, AS-BR, AS-BS, AS-BT, AS-CA, AS-D, AS-E, AS-G, AS-GP, AS-GR, AS-IRG, AS-ITR, AS-KB, AS-KN, AS-LB, AS-LC, AS-LG, AS-L3G, AS-L4G, AS-LR, AS-LT, AS-OL, AS-PH, AS-RL, AS-RDD, AS-RR, AS-RS, AS-S, AS-SG, AS-SR, AS-SW, AS-TR, AS-VL

NATIONAL® CARBANTHRENE® DIRECT BLACK RB FLAKES
(National)
An anthraquinone vat dye in a dispersed flake form producing reddish-black shades on cotton and rayon. It may be dyed by the various pigment impregnation methods as well as the reduced bath method. It is unaffected by the presence of metals in the dyebath and is suitable for use in all types of dyeing equipment. It is stated that it exhibits maximum fastness to light in heavy shades, the highest AATCC rating, and excellent fastness to most wet processing. This product is suitable for coloring materials that are to be resin finished for crease resistance, as well as materials that are subsequently to be rubberized.

NATIONAL® CARBANTHRENE® GREY BFN PASTE
(National)
An anthraquinone vat dye producing attractive grey shades on cotton and rayon. It is unaffected by the presence of metals in the dyebath, suitable for use in all types of dyeing equipment and may also be applied by the various pigment impregnation methods as well as the reduced bath method. It is stated that it exhibits excellent to maximum fastness to light in medium and heavy shades, and maximum light fastness, the highest AATCC rating, in heavy shades. In addition, it is said to possess excellent fastness to most wet fastness tests including chlorine and washing. This product is suitable for the production of material that must possess exceptional fastness properties, and materials that are subsequently to be rubberized. It is also recommended for coloring materials that are to be resin finished.

NATIONAL® CARBANTHRENE® RED G2BP PASTE
(National)
An anthraquinone vat dye producing, on cotton and rayon, bluish-red shades. It is said to exhibit maximum light fastness, the highest AATCC rating, in medium and heavy shades; and excellent fastness to most wet fastness tests. It is unaffected by the presence of metals in the dyebath and is suitable for use in all types of dyeing equipment. This product is particularly well adapted for any textile application involving pigment impregnation. It is recommended by the manufacturers for coloring materials that are to be resin finished for crease resistance and for the production of materials that must possess exceptional fastness to light, commercial laundering and chlorine bleaching.

NATIONAL® CARBANTHRENE® VIOLET BNX DOUBLE FLAKES
(National)
An anthraquinone vat dye in a dispersed flake form producing exceptionally blue shades of violet on cotton and rayon. It is stated that it exhibits very good to excellent fastness to light; and excellent fastness to most wet fastness tests including washing and chlorine. It is unaffected by the presence of metals in the dyebath; suitable for use in all types of dyeing equipment, and may also be applied by the various impregnation methods as well as the reduced bath method. This product is recommended by the manufacturers for coloring materials that are to be resin finished for crease resistance and for materials that must possess excellent fastness to light and commercial laundering.

NATIONAL® ERIE® BRILLIANT ORANGE 3RC
(National)
A direct dye producing bright shades of reddish-orange on cotton and rayon. The exceptionally bright shades produced by this product is one of its outstanding characteristics. It is said to possess moderate fastness to light and most wet processing. Aftertreatment with urea-formaldehyde resin improves light and washing fastness, while altering the shade appreciably yellower. It dyes cotton-rayon blends to a good union and leaves acetate practically unstained. It is also suitable for coloring paper and leather.

NATIONAL® RED PDC BASE
(National)
An azoic base producing, on cotton and rayon, a range of bright, bluish-red shades when diazotized and coupled with most National Naphthols except National Naphthol AS-G Disp, which yields a bright, greenish-yellow. Most of these couplings are said to exhibit good fastness to light, and very good to excellent fastness to most wet fastness tests. An outstanding characteristic of this product,

when coupled with National Naphthol AS-SW, is said to be its very good fastness to peroxide bleaching. It is therefore recommended for coloring yarns for toweling and other materials where peroxide bleaching fastness is required. National Red PDC Base is applicable by all the dyeing processes generally employed for dyes of this type, and many of the combinations can be discharged to excellent whites.

NEOPILATE DYESTUFFS
(Putnam)
These are premetallized dyestuffs which are used with small amounts of sulfuric acid.

ORCOCHROME GREY MBLL
(Organic)
This chrome dyestuff is distinguished for its true neutral shade of grey. It is stated that its extreme fastness to light, decatizing and wet processing, makes it a very useful color in the dye house. Orcochrome Grey MBLL can be dyed on wool with either the top chrome or metachrome method on stock, yarn, or piece goods. The color can also be applied to nylon.

ORCOLAN SALT CS
(Organic)
This product is especially recommended by the manufacturers for use in the dyeing of the Orco Metallan range of colors on wool and nylon. It is said to promote penetration and levelness and, on nylon piece goods, tends to attenuate barre effect.

ORCO METALLAN BLUE BLACK M2B
(Organic)
A recent and versatile addition to the line of metal-complexed dyestuffs for the dyeing of wool, silk, and nylon in all forms. It is claimed that its extreme light fastness and general all-round fastness, together with its shade and tone, make it especially useful for the production of midnight navies, either as a self-shade or in combination with other available colors in the range.

ORCO METALLAN BLUE MB CONC
(Organic)
This dyestuff represents a new addition to the range of metal-complexed colors for the dyeing of wool, silk, and nylon as rawstock, tops, yarn, or piece goods. Orco Metallan Blue MB Conc is said to possess excellent light fastness and fastness to wet processing. It is claimed to be comparable in all respects to the best chrome colors, but lower in cost, due to its simplicity of application.

ORCOSOL BLACK 9HM
(Organic)
This dyestuff, when dyed with a recently perfected method of application, will color more or less uniformly a total of nine different fibers. The fibers are:- Celanese, spun Orlon 42, filament Dacron, spun Dacron, Dynel, Acrilan, spun nylon, silk, and wool. In addition, it stains cotton, rayon, and Orlon 81. Because of its affinity for such a wide variety of fibers, this color is highly recommended by the manufacturers for the dyeing of blended wool stock and shoddy. It has also been used successfully in producing an even shade of black on blended 50-50 Dacron-wool yarn.

ORCO SYNTHROWITE OR
(Organic)
Orco Synthrowite OR is a water-soluble optical whitener for use on Dacron and Orlon. It produces a greenish-white effect which is said to have good fastness to light, washing, chlorine, and good resistance to thermosetting. This product also has affinity for acetate and offers definite benefits for protein and cellulose fibers, which makes it useful for application on blended fabrics.

ORTOLAN DYESTUFFS
(Putnam)
These are neutral dyeing premetallized dyestuffs which also include the range of Ortol dyes used for brightening shades produced with Ortolan colors.

PALACET DYESTUFFS
(Putnam)
This range represents disperse dyestuffs for direct application as well as for development and for dyeing of white discharge grounds.

PALANTHRENE DYESTUFFS
(Putnam)
This is a range of vat colors representing the usual paste form, powder fine for dyeing and concentrated powder types as well as the finely dispersed pastes and powders under the trade name of Palanthrene Colloisol.

PAPER SCARLET 3BAP
(General Dyestuff)
A new dyestuff for dyeing paper, which gives self shades that are distinctly bluer and also slightly brighter than dyeings of Paper Scarlet BAP and somewhat duller than dyeings of Paper Red APX. It is offered especially for use in combination with Paper Red APX to obtain even-sided sheets of clay-loaded papers as it colors the clay, whereas Paper Red APX does not.

PARAMOUNT BLACK GDA POWDER
(General Dyestuff)
A new, water-dispersible pigment with an average particle size of about one micron, which contains an anion-active dispersing agent. It is said to be excellently suitable for the spin dyeing of viscose and cuprammoniun rayon yarns for the production of rich blacks and grays of outstanding light-fastness. It has also been found successful in the manufacture of latex paints and other products in which a very fast, anionically dispersed black is required.

PEERACID FAST RED GL CONC
(Peerless)
Said to be a very fast to light acid red which dyes from a sulfuric acid bath. It is stated that it is level dyeing, fast to prolonged boiling and its good money value makes it of interest for either fast to light reds or in combinations for mode shades. It is recommended by the manufacturers for raw stock and carpet yarns, and its excellent solubility makes it of interest in machine dyeing.

PEERAMINE COLORS
(Peerless)
The trade name "Peeramine" is being used to identify the following direct dyestuffs:

C I	816	Peeramine Brilliant Flavine S
C I	814	Peeramine Fast Yellow GFG 125%
*C I	814	Peeramine Fast Yellow WB 125%
C I	814	Peeramine Fast Yellow NNL 175%
C I	814	Peeramine Fast Yellow NNL 100%
C I	814	Peeramine Fast Yellow FFX
C I	814	Peeramine Fast Yellow SB
C I	814	Peeramine Fast Yellow RRT
*C I	812	Peerless Primuline Conc
*Pr	147	Peeramine Diazo Black OB Cono
Pr	589	Peeramine Fast Yellow RLSW
Pr	53	Peeramine Fast Yellow 4GL
C I	346	Peeramine Fast Yellow 5GL
		Peeramine Fast Orange 2GLL
Pr	578	Peeramine Fast Orange 4GL
*C I	561	Peeramine Fast Brown BCW
*Pr	70	Peeramine Catechine G
*Pr	70	Peeramine Catechine 3G

*New products

PEERVAT F BRANDS
(Peerless)
A new brand series of vat colors, which are said to meet the highest standards of vat color performance in respect to dispersion for use in pigment padding and package dyeing. These anthraquinone vat dyes yield important shades of black and navy which are said to have very good fastness to light, to chlorine, to washing and to weathering. The letter F which appears following product designation means a Filtronized type for modern textile demands designed to meet rigid production specifications and consumer requirements.

C I 1102	Peervat F Black BA Dbl Paste
C I 1102	Peervat F Black BBN Dbl Paste
	Peervat F Black GHB Paste
	Peervat F Direct Black CH Paste
C I 1099	Peervat F Dark Blue BO Paste
C I 1100	Peervat F Navy Blue BR Dbl Paste

PERMANENT RED BL EXTRA POWDER
(Carbic-Hoechst)
It is claimed that this is the fastest organic pigment red available, outstanding in fastness to light, heat resistance, insolubility in solvents, non-blooming properties.

PHARMA ALIZARINE CYANINE GREEN GN EX CONC
(Pharma)
A neutral dyeing type of cyanine green for dyeing wool and nylon from a completely neutral bath. Effects of acetate, cotton and viscose are left almost white. Wet fastness properties are said to be very good as are light fastness and crock fastness properties.

PHARMA CHROME BLACK T 156%
(Pharma)
A deep, economical shade of black for dyeing by the conventional chrome methods. The product is said to have excellent wet fastness properties.

PHARMACID ALIZARINE CYANINE GREEN G
(Pharma)
A full, economical shade of green for dyeing wool and nylon from a slightly acid bath. The product leaves viscose, acetate and cotton effects perfectly white. All wet fastness properties are said to be very good. This is true also of the light fastness.

PHARMANTHRENE BLUE BF DOUBLE PASTE
(Pharma)
An anthraquinone vat dye with an unusually clear, light reddish-blue shade. The product may be used for all dyeing methods, including package machine dyeing. It is claimed that the product has excellent wet fastness properties throughout, with very high light fastness.

PHARMANTHRENE BLUE BFN DOUBLE PASTE
(Pharma)
An anthraquinone vat dye with an unusually clear, light reddish-blue shade. The product may be used for all dyeing methods, except package machine dyeing. It is claimed that the product has excellent wet fastness properties throughout, with very high light fastness.

PHARMANTHRENE BROWN BRF PASTE
(Pharma)
An anthraquinone vat dye with a dark, reddish shade. The product is intended for application on all dyeing methods including machine dyeing. Excellent wet fastness and general properties are claimed.

PHOSPHINE 3RN
(Pharma)
A basic color with a yellowish-brown shade. The product is intended for dyeing silk, leather and also for application printing on silk. The product has excellent resistance to hydrosulfite.

PILATE DYESTUFFS
(Putnam)
These represent premetallized acid dyestuffs.

PITTSBURGH PHTHALOCYANINE BLUE BIC PRESSCAKE
(Pittsburgh)
A phthalocyanine pigment of the crystallizing variety exhibiting the typical red shade. This product is said to have a dark masstone, excellent strength characteristics, and extraordinary stability properties for which the phthalocyanines are noted.

"PONSOL" DARK BLUE BRD PASTE
(Du Pont)
A specially prepared anthraquinone vat dye, manufactured in the form of a thin, free-flowing paste, that possesses outstanding pigment filtration properties. It is particularly suited to package and beam dyeing either as a self shade or in combinations with other suitable vat dyes. It is recommended by the manufacturers for dyeing cotton or rayon yarn intended for end uses requiring good fastness to light, peroxide bleaching, dry crocking, chlorine and washing. "Ponsol" Dark Blue BRD paste is similar in shade and fastness properties to "Ponsol" Dark Blue BR Paste and "Ponsol" Dark Blue BRD Double Powder, and is equal in strength to the older paste type. It reduces readily and is normally reduced and dyed at 140°F using a concentration of 3/4 to 1 ounce per gallon each of caustic soda and Du Pont

Hydrosulfite Conc. It is stated that this new product can be dyed at temperatures as high as 190°F, has good vat stability over prolonged periods of time, dyes levelly, penetrates well, exhausts efficiently and is unaffected by metals.

Since "Ponsol" Dark Blue BRD Paste was primarily developed for use in circulating equipment, it does not perform as well as "Ponsol" Dark Blue BR Paste in the Du Pont Pad-Steam Continuous Dyeing Process for dyeing piece goods by the pad-dry technique. It is suitable, however, for pad-jig or vat-acid applications.

"PONSOL" GRAY LD PASTE
(Du Pont)

An anthraquinone vat dye with a neutral gray shade. It is recommended for package and beam dyeing, producing level dyeings on packages when applied by either reduced or pigment reduced methods, and is claimed to be superior in this respect to other vat grays. Because of its neutral shade, it is also attractive for application to piece goods by pad-jig or by the Du Pont Pad-Steam Continuous Dyeing Process. "Ponsol" Gray LD Paste is recommended for uses requiring moderately good resistance to most color-destroying influences.

"Ponsol" Gray LD Paste reduces readily at 120° to 140°F with caustic soda and Du Pont Hydrosulfite Conc to a brown vat. A concentration of three-quarters to one ounce per gallon each of caustic soda and Du Pont Hydrosulfite Conc is usually sufficient for reduction and dyeing in circulating equipment. Higher concentrations of caustic soda and hydrosulfite are required when processing piece goods with the quantities of these chemicals depending on the conditions of application.

Another advantage of "Ponsol" Gray LD Paste is said to be its good stability during reduction and dyeing over the temperature range of 120° to 190°F. It is particularly useful for the production of gray shades in conjunction with "Ponsol" Brown RBT Paste, "Ponsol" Navy Blue Double Paste and "Ponsol" Jade Green Supra Double Paste employing various dyeing methods. It is stated that this new vat gray exhausts well, exhibits little shade change on soaping and remains on tone under incandescent light.

"PONSOL" JADE GREEN DOUBLE PASTE FOR DYEING

"PONSOL" JADE GREEN DOUBLE PASTE FOR PRINTING
(Du Pont)

These two types of Jade Green are additions to the Du Pont line of vat dyes for specific applications as indicated by their names. They possess the outstanding general fastness characteristic of the "Ponsol" anthraquinone range of vat dyes and should provide excellent results when used for the purposes indicated.

"PONSOL" NAVY BLUE 2B DOUBLE PASTE
(Du Pont)

A new anthraquinone vat dye which is recommended for the production of economical navy shades on both cotton and rayon. This product has the characteristic good fastness to light, washing, chlorine and water spotting of other vat dyes and is suggested for use on dress goods, shirtings, uniform fabrics and other materials where good all-round fastness is essential. "Ponsol" Navy Blue 2B Double Paste is normally reduced and dyed at 140°F. The color is said to dye levelly, show good penetration and exhaust well. It is also suitable for use by the pigment method and can be applied in all types of dyeing equipment. In this respect, the color shows exceptionally good results when applied by the Du Pont Pad-Steam Continuous Dyeing Process. "Ponsol" Navy Blue 2B Double Paste possesses sufficient stability in the reduced form for application at 190°F.

"PONSOL" NAVY BLUE HG DOUBLE PASTE
(Du Pont)

An anthraquinone vat dye that produces navy blue shades of outstanding brightness on cellulosic fibers. It is said to possess all-round good fastness properties and is recommended as a base for making bright shades of navy and also as a shading component in the currently popular Postman Blue shade for work clothing. It is stated that this new dye is also of considerable interest for use as a bluing element in gray shades where good resistance to either chlorine or peroxide bleaching is required. "Ponsol" Navy Blue HG Double Paste is suitable for dyeing all forms of cotton or rayon and can be applied in all types of equipment. It is applicable by reduced dyeing methods or as a dispersion followed by reduction. It exhausts well, is not sensitive to normal variations in the concentration of caustic soda and Du Pont Hydrosulfite conc, can be dyed over a wide temperature range and has good stability at high temperatures. The shade of "Ponsol" Navy Blue HG Double Paste is appreciably redder on mercerized cotton and considerably redder on spun rayon compared with a dyeing on unmercerized cotton. This dye changes redder in shade under incandescent light and becomes noticeably redder in shade upon soaping.

"PONSOL" RED BROWN N PASTE
(Du Pont)

An anthraquinone derivative vat dye which is said to produce economical reddish-brown shades on cotton and rayon with the all-round good fastness characteristics of other vat dyes. "Ponsol" Red Brown N Paste is a good base for many brown shades and is especially suitable as a shading component. It is said to be of interest for use on cotton or rayon drapery and upholstery fabrics, uniform fabrics, shirtings, and other articles that require good fastness to light, washing, pressing and drycleaning. Moreover, it does not stain adjacent nylon during laundering. "Ponsol" Red Brown N Paste reduces readily with caustic soda and Du Pont Hydrosulfite Conc to a reddish-brown vat. It is recommended for skein and warp dyeing of cotton yarns and can be applied with excellent results to piece goods by the Du Pont Pad-Steam Continuous Dyeing Process and by the pigment pad-jig method. This dye is normally applied at 120° to 140°F with the usual concentrations of caustic soda and Du Pont Hydrosulfite Conc. Application at 190°F aids in obtaining better levelness although the resulting shade is noticeably yellower and duller than a similar dyeing carried out at 120°F. Dyeings of "Ponsol" Red Brown N Paste change much yellower and brighter in shade under incandescent light.

"PONTACYL" BLUE BLACK SAW
(Du Pont)

An acid dye which leaves acetate fibers unstained when dyeing full black shades on wool. It shows little shade change under incandescent light. It is said to exhibit good lightfastness in full shades and has wetfastness properties adequate for many end uses. It is recommended for the production of blacks and as a base for bottle greens on woolen materials such as women's wear suiting fabrics and hat felts. It is similar in application and fastness properties to "Pontacyl" Blue Black SX, has good solubility, dyes levelly and penetrates well. It is normally applied from dyebaths containing anhydrous sodium sulfate and sulfuric acid and can be shaded with such dyes as Du Pont Tartrazine, Du Pont Orange II and "Pontacyl" Rubine R.

"PONTAMINE" FAST BLUE 7GL
(Du Pont)

A new direct dye that produces greenish-blue shades on cotton and rayon. It is said to possess good lightfastness on these fibers and is of special interest for application to spun rayon because of its good resistance to the effects of resin treatments. It is recommended by the manufacturers for use on suitings, dress goods, sportswear and other fabrics requiring good lightfastness and fairly good resistance to washing and other color-destroying influences. On rayon, it is said to have good fastness to crocking, drycleaning, perspiration, and fairly good washfastness that is improved with a resin aftertreatment. The fastness properties on cotton are slightly inferior to those on rayon. "Pontamine" Fast Blue 7GL is essentially similar to "Pontamine" Fast Blue 6GL in application and fastness properties but is appreciably greener and noticeably brighter in shade. "Pontamine" Fast Blue 7GL dyes levelly, penetrates well and exhibits good buildup on either cotton or rayon. It can be applied by padding and performs well in customary types of dyeing equipment by normal methods. In incandescent light it becomes much greener and duller in shade. When used to dye cotton or rayon fabrics containing other fibers, leaves acetate, "Dacron" polyester fiber and "Orlon" acrylic fiber unstained, stains nylon a trace and shows considerable staining of silk and wool.

"PONTAMINE" GREEN BXY
(Du Pont)

A direct dye similar in application and fastness properties to "Pontamine" Green BXN although yellower and duller in shade. It is recommended as a general-purpose color for use on all forms of cotton as a self shade or as a base in the production of dark greens and olives. It is stated that it can be discharged, has good working properties and moderate all-round fastness.

"PONTAMINE" WHITE BT SOLUTION
(Du Pont)

"Pontamine" White BT Solution is the latest addition to the Du Pont line of optical whiteners. It is fully equal to "Pontamine" White BT and is especially suitable for use on cotton and rayon as well as being useful on nylon, silk and wool. It is stable down to 30°F, and is said to possess very good fastness to washing, discharge printing, peroxide bleaching and is equal in lightfastness to other whitening agents. It is, however, unstable when used in processing steps containing chlorine or on prolonged exposure to light while in water solution. "Pontamine" White BT Solution is applied as a direct dye at temperatures of 130° to 200°F to cotton or rayon and is dyed with weak acids on nylon, silk and wool.

PYRAZOL FAST SKY BLUE 7GUL
(Sandoz)

High fastness among the bright blue direct dyes is claimed plus money value. Gives bright greenish blue shade; perfect reserve of nylon and acetate fibers. Aftertreatment with UF or UF/Sandofix does not cause degradation of the light fastness. See Sandoz leaflet T-7198a.

PYRAZOL FAST GREEN 5GL
(Sandoz)

Fast-to-light direct green, recommended for bright shades on dress goods, shirting, and cotton yarns. Lightfastness unaffected by UF resin. Washfastness improved by UF/Sandofix aftertreatment. For full data, see Sandoz leaflet T-7258a.

PYRAZOLINE ORANGE R
(Pharma)

A substantive color for application on cotton and rayon by ordinary methods. The shade is a clear, reddish-orange. It is stated that the outstanding features are light fastness, dischargeability and white reserve of wool, silk, nylon and acetate. The product may be used in conjunction with melamine and urea-formaldehyde resins with no effect on shade or light fastness. The product is an excellent component in mixtures. The general wet fastness properties are said to be excellent.

RAPID FAST DYES
(Carbic-Hoechst)

Rapid Fasts are azoic combinations which are recommended for printing on cellulose fabrics and they form insoluble azo dyes when neutral or acid aged in the presence of an oxidizing agent. They are particularly recommended for printing as resist colors under Aniline Black and they are said to be suitable for printing alongside pigments, vats and fiber-reactive dyes.

The principal Rapid Fasts are:
Yellows GH Conc GGH, 13GH
Golden Yellow IGH
Golden Orange IGGH
Oranges IGH, IRH, RH
Bordeaux BBH, RRH, IBH, RH
Reds FGH, GZHN, IRH, RH
Scarlets ILH, IRH
Blue BN
Browns GGH, IBH, IRH, 13RH
Olive Brown IGH

RAPIDAZOL DYES
(Carbic-Hoechst)

Rapidazols form insoluble azo dyes on cellulose fabrics when neutral or acid aged in the presence of an oxidizing agent and they supplement the range of Rapid Fast shades.

Rapidazol Black RG is said to be especially suitable for printing alongside vat and fiber-reactive dyes.

The principal Rapidazols are:

Orange FB
Blue 1B
Navy Blues G and RR
Blacks R and RG

RAPIDOGEN* BLACK 2G SOLUTION
(General Dyestuff)

A new stabilized product in liquid form for printing economical blacks of good all-round fastness properties on cotton and rayon, which are said to be characterized especially by very good fastness to formaldehyde and excellent resistance to caustic plisse. It gives redder shades than its comparable companion product, Rapidogen Black 3G Soln.

*Registered trademark

REMALAN BRILLIANT BLUE B—REMALAN BRILLIANT BLUE R
(Carbic—Hoechst)

It is stated that these are the first fiber-reactive dyes for wool. Dye also nylon and Acrilan. They are said to have outstanding washfastness with best washfastness on nylon.

REMALAN YELLOW GG
(Carbic—Hoechst)

Belongs in the class of fiber-reactive dyes for wool.

REMASTRAL BLUE F3GL
(Carbic—Hoechst)

This dye is said to be the fastest to light direct blue. It leaves nylon white.

RICHPALEGOLD TEXTILE B2127
RICHPALEGOLD TEXTILE 824Y
(Atlantic Metals)

Two recently developed types of brilliant bronze powder said to possess high coverage, excellent light stability, wash fastness and resistance to tarnish. Especially suitable for calendering.

RINSEFREE TINTS (TM Pat Pending)
(Polymer)

A series of specially manufactured and compounded coloring materials for fugitively identifying wool, worsted, synthetic yarns and fibers, and blends of the same. Suited for application on all conventional yarn and fiber processing machinery in common use. Are especially recommended for use where prolonged steaming is necessary and subsequent removal by simple—rinse is necessary.

RONAGEN COLORS
(Putnam)

These are stabilized mixtures of naphthols and azo salts.

SALICINE BLACK HC CONC
(Carbic—Hoechst)

A non-dusting Chrome Black T of improved solubility, said to be better than types produced heretofore.

SANDOTHRENE* COPPER RED NR DOUBLE PASTE ULTRASPERSE*
(Sandoz)

Suitable for application by all vat dyeing methods, Sandothrene Copper Red NR Double Paste Ultrasperse gives bright copper red self-shades said to possess very good light fastness and levelness. Its fastness to peroxide bleaching is outstanding. See Sandoz vat shade card insert US 208-42.

*T M Sandoz, Inc. vat dyes

SANDOTHRENE* YELLOW NLGR PASTE ULTRASPERSE*
(Sandoz)

Level dyeing vat yellow said to possess good all around fastness properties. It is stated that light fastness is high even in pastel shades. Suitable for application by all methods including printing by flash aging. Best results in pigment application. See shade card insert US 208-41 for properties.

"SEVRON" BLUE BGL
(Du Pont)

"Sevron" Blue BGL is said to have outstanding lightfastness and is the brightest blue in the range of "Sevron" dyes for "Orlon" acrylic fiber. It is claimed that it will withstand better than 160 hours' exposure in the Fade-Ometer when used alone at any concentration. However, the high degree of lightfastness cannot be obtained in compound shades because of other dye limitations. "Sevron" Blue BGL is especially suitable for use in the production of turquoise shades and can be combined with "Sevron" Yellow 3RL and "Sevron" Red GL for making gray and tan shades that meet fastness requirements for men's suitings. It should be dissolved with one part of glacial acetic acid for each part of dye. It is best applied at pH 4.0 to 6.0, builds up well and dyes levelly with a minimum amount of Du Pont Retarder LAN in the bath. "Sevron" Blue BGL stains wool more than other "Sevron" dyes when it is used to dye the "Orlon" in blends of "Orlon" and wool. The stain can be removed from the wool by scouring with a solution of zinc sulfoxylate formaldehyde. It has moderate affinity for "Acrilan" and fairly good lightfastness on the fiber. It is not recommended for use on acetate, nylon or silk.

"SEVRON" BRILLIANT RED 3B
(Du Pont)

A bright, bluish-red cationic dye of particular interest for use in the production of many popular bright red shades in combination with "Sevron" Yellow R, "Sevron" Orange G and "Sevron" Brilliant Red B. It is also of interest for use as a shading component for making other shades such as tans, browns and grays. It builds up well to a maximum strength of 5.0% and is unaffected in shade by differences of the pH of dyebaths over the pH range of 3.0 to 10.0. It dyes rapidly at the boil and requires the use of a Du Pont retarding agent to insure level dyeings, particularly in light shades. The use of Glauber's Salt along with retarding agent is also recommended as a further aid to level application. This product is especially suited to dyeing the "Orlon" component in blends of "Orlon" and wool since little wool staining occurs. In dyeing such blends, acid dyes can be applied to the wool to obtain union shades or cross-dye effects. This new dye yields attractive bluish-red shades on acetate that are said to possess good washfastness and fair lightfastness. It is stated that on "Acrilan" acrylic fiber "Sevron" Brilliant Red 3B builds up well, has excellent washfastness and fairly good lightfastness. "Sevron" Brilliant Red 3B exhibits good affinity for silk and nylon, producing bluish-red shades on silk and violet shades on nylon, but is not recommended since it exhibits inferior fastness properties in comparison with dyes normally applied to these fibers.

"SEVRON" BORDEAUX G
(Du Pont)

A maroon dye with good buildup on "Orlon" type 42 acrylic fiber. It is said to have good fastness to light and wet processing and is recommended as an economical component in making dark brown, wine and maroon shades. It is suitable for dyeing the "Orlon" in blends of "Orlon" and wool. The shade is unaffected when applied to "Orlon" over the pH range of 3.0 to 6.0; pH values above 7.0 decrease its affinity. Maximum exhaustion of this dye is obtained by employing a dyeing temperature as close to 212°F as possible. The use of Du Pont Retarder LAN and sodium sulfate is recommended as specified for producing level dyeings of this color. In incandescent light, dyeings become yellower and brighter in shade. It possesses moderate affinity for "Acrilan" acrylic fiber, exhibits fair lightfastness on this fiber and is not recommended for use on acetate, nylon or silk.

"SEVRON" RED GL
(Du Pont)

"Sevron" Red GL produces brick red shades on "Orlon" type 42 acrylic fiber and is said to possess very good fastness to light and wet processing. This new cationic dye is recommended for use with other lightfast "Sevron dyes in producing gray, tan and brown men's wear suiting shades. It is suitable for dyeing the component of "Orlon" in blends of "Orlon" and wool since it shows little staining of the wool in strengths up to 2.0%. It has a dyeing rate similar to that of "Sevron" Red L. It is relatively slow dyeing and is satisfactory for use with dyes such as "Sevron" Blue 2G, "Sevron" Blue B and "Sevron" Yellow 3RL. Du Pont Retarder LAN is recommended for use in obtaining level dyeings, particularly in light shades. Anhydrous sodium sulfate used with the retarding agent assists in leveling and maintains the shade under varying pH conditions. It is less sensitive to dyebath pH conditions than "Sevron" Red L. It dyes acetate, nylon and silk although the fastness properties are inferior to those of the dyes specifically designed for the fibers. "Sevron" Red GL has good affinity, good wetfastness and fairly good lightfastness on "Acrilan" acrylic fiber.

"SEVRON" YELLOW 3RL
(Du Pont)

"Sevron" Yellow 3RL produces reddish-yellow shades, is said to exhibit excellent lightfastness and is recommended for use with other lightfast "Sevron" dyes in producing grays, tans and browns on men's wear fabrics of "Orlon" type 42. Combination shades containing this dye exhibit superior lightfastness to similar shades in which other "Sevron" yellows are used. This new product is also of interest for producing lightfast blacks in combination with Du Pont Fuchsine and Du Pont Victoria Green Small Crystals. It has good dyebath stability over the pH range of 4.5 to 8.0 while strongly acid dyebaths (below pH 4.5) cause the shade to become redder. It builds up well, has a half-dyeing time of 24 minutes at 1.0% strength and is satisfactory for use with slower dyeing "Sevron" Blue 2G, "Sevron" Blue B and "Sevron" Red GL. Du Pont Retarder LAN is recommended for use with the dye in light shades to produce level dyeings. Anhydrous sodium sulfate along with the retarder aids in obtaining level dyeings and improves the shade stability of the dye. It is suitable for dyeing the "Orlon" in blends of "Orlon" and wool to union or contrasting shades since it stains wool negligibly. It dyes acetate, nylon and silk but is inferior in fastness properties to dyes normally used on the fibers. "Sevron" Yellow 3RL has good affinity for "Acrilan" acrylic fiber, builds up well to a strength of 2.0% and shows good fastness to light, crocking and washing.

SIRIUS* SUPRA GREEN GL
(Verona)

A homogeneous direct dyestuff producing a clear green shade. It is stated that, in addition to its inherent very good fastness to light, the shade and light fastness of Sirius Supra Green GL is unaffected by most resin finishes. Solid shades are obtained with this dyestuff on blends of cotton and rayon. Acetate rayon is only slightly stained.

*Registered trademark, Bayer Leverkusen

SIRIUS* SUPRA GREY CGL
(Verona)

A homogeneous direct dyestuff said to possess very good fastness to light and good neutral and alkaline dischargeability. Sirius Supra Grey CGL possesses good leveling properties and excellent stability to hard water.

*Registered trademark, Bayer Leverkusen

SIRIUS* SUPRA SCARLET GL
(Verona)

A homogeneous direct dyestuff producing yellowish shades of scarlet said to be of very good fastness to light. This dyestuff possesses good neutral and alkaline dischargeability and produces good tone in tone shades on blends of cotton and rayon.

*Registered trademark, Bayer Leverkusen

SOLAR* COATING VIOLET RLM CONC
(General Dyestuff)

A water-dispersible pigment made from a phosphomolybdate toner of basic dyes, which has been especially compounded and standardized for tinting paper coatings applicable

*Registered trademark

on the machine or in conversion brush coating. It may be incorporated into either synthetic latex or starch formulations and may also be added to casein-bound coatings that are less alkaline than pH 9.0.

SOLOPHENYL* BLUE 5 GL
SOLOPHENYL* BLUE 8 GL
(Geigy)

Two new Solophenyl colors said to be outstanding as economical dyestuffs for producing bright blue shades with good light fastness. Both colors reserve acetate and nylon exceptionally well and are adapted for use with copper fixatives such as Gycofix 67 and/or anti-crease resin finishes.

Solophenyl Blue 8 GL produces a very green cast while the Solophenyl Blue 5 GL, although somewhat redder, is the brighter of the two colors.

The two new dyestuffs exhaust slowly, migrate very well and for level dyeing are considered by their manufacturer to be unexcelled. They are recommended for all cellulosic fibers where a high degree of light fastness is desired.

*Registered trademark

SOLOXAN* BLACK SA
(Arnold, Hoffman)

An improved oxidation black dyestuff which is marketed in powder form. It is of interest particularly for application to cellulosic fibers, wool and silk. It is claimed that Soloxan Black SA is superior to aniline and diphenyl blacks in print paste stability, freedom from tendency to weaken fabrics and its adaptability to a wide variety of printed patterns. Fastness properties are said to be excellent and yield is high.

*Registered trademark

SULFONINE NAVY RWL Pat
(Sandoz)

The extremely white dischargeable properties of this navy blue are especially useful for medium and navy shades on wool or silk. It is said to be fast to light, washing, perspiration, and water. See leaflet No. 1291 for data.

SUNTONE* BLACK 0S2K 2601
(Warwick)

This pigment is of intense jet black character and is set to possess high tinctorial power. It is used in water-in-oil pigment printing systems.

*Trademark—registered

SUNTONE BLUE OSG #2401 and #2402
(Warwick)

#2401 is a new pigment paste characterized by a bright reddish cast and an overall clean hue. It is used in water-in-oil pigment printing emulsion applications.

#2402 is a new pigment paste characteristically having a greener cast giving a clean hue. Used in water-in-oil systems of emulsion printing.

SUNTONE BLUE OS2G (RB 21)
(Warwick)

This produces unusually clean green shades of blue. It is claimed that it is remarkable in its fastness properties to light, washing, drycleaning and crocking.

SUNTONE BLUE OS4G
(Warwick)

A clean green shade of blue with tinting running towards aqua.

SUNTONE BROWN OSV #2802
(Warwick)

This is a new fast curing water-in-oil emulsion printing color said to possess excellent dry cleaning resistance and wash fastness. It is characterized by its clean bright chocolate hue.

SUNTONE BROWN OSV (RB 32)
(Warwick)

A rich chocolaty shade, said to cure very rapidly and possess excellent lightfastness and dry cleaning fastness.

SUNTONE GREEN OSB — #2303 and #2305
(Warwick)

#2303 is characterized by its reddish cast and clean hue. Applicable in water-in-oil emulsion systems of pigment printing.

#2305 is characterized by being a greener green with clean hue. It is used in water-in-oil emulsion systems of pigment printing.

SUNTONE NAVY OS2R (RB 24)
(Warwick)

It is stated that this is a good economical color used mainly for toning purposes.

SUNTONE ORANGE OS4O
(Warwick)

A new pigment paste of bright reddish cast. It is stated that this color is characterized not only by its brightness of hue but by excellent dry cleaning and alkaline wash resistance properties. It is used in water-in-oil pigment printing emulsion systems.

SUNTONE RED OSC
(Warwick)

A completely new red said to possess outstanding lightfastness and drycleaning resistance.

SUNTONE RED OSR
(Warwick)

This is said to be an excellent high tinctorial value red. It is stated that it has superior lightfastness and resists plasticizer bleed. It was developed for printing plastic laminated fabrics.

SUNTONE RED VIOLET OS4R (RB 70)
(Warwick)

This is said to be a very clean red shade of violet.

SUNTONE SCARLET OS2Y #2008
(Warwick)

This color is said to be extremely fast to dry cleaning and possesses a slightly yellow cast. It is an extremely clean hue. It is used in water-in-oil pigment printing systems.

SUNTONE VIOLET OS4Y
(Warwick)

This is a bright yellow shade said to possess best money value and good lightfastness.

SUNTONE WHITE OS2I (RB 80)
(Warwick)

This is said to be a whiter and brighter product which is excellent for discharge and resist printing.

SUNTONE WHITE OS3I (RB 82)
(Warwick)

An all-purpose white which is said to have high opacity and excellent money value.

SUNTONE YELLOW OS2R (RB 90)
(Warwick)

Extremely superior lightfastness is claimed. It is a new coupling fast to light type. It is stated that it passes perchlorethylene test and also #3A and #4 wash tests. It is superior to OS2G types.

TINON* COPPER RED R PASTE
(Geigy)

The introduction of this color is said to fill the need for a vat red with good light fastness that has good working properties. Although best results are obtained when applied at medium temperatures, it can also be applied at extremely high temperatures with little effect on cast or depth. It can also be said that there is only a minute change after soaping. It is well suited either as a self color or as a base for the production of shades ranging from light rose to full copper reds. The bleaching, washing, crocking, perspiration and other fastness properties are highly rated by the manufacturer.

*Registered trademark

TINON* YELLOW LGR PASTE
(Geigy)

It is said that this new vat yellow possesses exceptional light fastness with high washing, chlorine, perspiration and wet finishing resistance.

*Registered trademark

VEROCHROME BLACK PLS
(Verona)

A new chrome black said to be of outstanding solubility and excellent fastness properties. Recommended for the dyeing of wool at all stages of processing. Wool tops dyed with Verochrome Black PLS show excellent spinning properties.

VERANTHRENE* GREY BG PASTE ULTRAFINE
(Verona)

A homogeneous vat dyestuff claimed to be of excellent fastness to light and very good fastness to chlorine, peroxide, and soda boiling. It possesses excellent level dyeing properties.

*Registered trademark

VERANTHRENE* ORANGE GG PASTE FINE
(Verona)

A new homogeneous vat dyestuff said to be of excellent fastness to light and very good fastness to chlorine, peroxide and soda boiling. This orange shows excellent level dyeing properties and can be used according to all methods of application.

*Registered trademark

VERANTHRENE* RED BROWN GD ULTRAFIX* PASTE
(Verona)

A new vat brown said to possess very good fastness properties suitable for application and discharge styles. It is also recommended for flash aging. Outstanding features are stated to be excellent printing properties and lack of shade change in artificial light.

*Registered trademark

VERANTHRENE* SCARLET B ULTRAFIX* PASTE
(Verona)

A new bluish vat scarlet for application and discharge printing said to possess excellent fastness to sunlight and washing. It is claimed that, unlike other vat dyestuffs, the fastness to sunlight of this scarlet far exceeds that shown in the Fade-Ometer.

*Registered trademark

VERANTHRENE* YELLOW F2GC PASTE FINE
(Verona)

A homogeneous vat dyestuff said to be of excellent fastness to light, chlorine, peroxide and soda boiling. It possesses excellent leveling properties and is nontendering upon exposure to light. Recommended for draperies and curtains.

*Registered trademark

VERANTHRENE* YELLOW GREEN GC PASTE FINE
(Verona)

A new homogeneous vat dyestuff said to possess excellent fastness properties suitable for awnings and curtains as well as for colored bleach styles. It is claimed that the shade of this product cannot be matched with any dyestuff combination possessing equal fastness properties.

*Registered trademark

VIALON DYESTUFFS
(Putnam)

These are premetallized colors especially manufactured for dyeing of polyamide fibers.

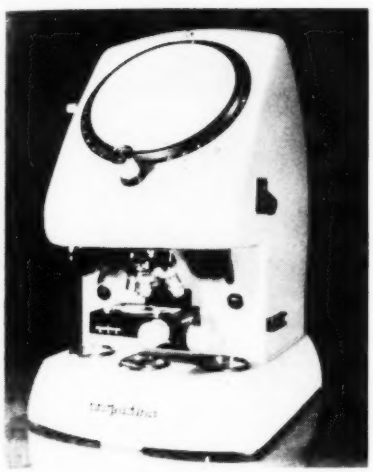
WOOL FAST BRILLIANT RED BL
(Carbic—Hoechst)

A very bright acid red, it is said to be the first level dyeing acid red which is fast to washing and perspiration. Dyes nylon-wool tone-in-tone and is completely discharge resisting.

EQUIPMENT

ALUMINUM AND STAINLESS STEEL DRUMS
(Aceto)

Aluminum and stainless steel drums are furnished in sizes from 5 to 100 gallons. The drums are of heavy construction and have "tri-sure" closures. They are constructed to facilitate easy stacking. Special types of stainless steel, ICC types and special alloys, such as hydrogen-peroxide-resistant types are also available.



Projectina

PROJECTINA
(Alfred Hofmann)

Projectina is the name of a Swiss-perfected optical precision unit introduced recently in the American market by Alfred Hofmann & Co. Created for more economical inspection methods in research and quality control, it combines into a portable, streamlined housing microscope, projector, comparator, and camera. Accent is on rapid interchange of choice optics and photographic equipment. By fitting a simple adapter to the observation face of the instrument, any image previously projected on the screen in the magnification range 7x to 2000x may be photorecorded with either the Graflok back or Polaroid Land back in black and white or color. Micro pictures reportedly may be seen on an effective 7-inch ground glass screen and also through the eye piece, at a constant scale, without refocusing. Powerful built-in illuminators allow for easy microscopy and projection in transmitted bright and dark-field as well as surface bright- and dark-field, it is claimed. The light intensity is variable by finger-tip control. Stationary stages for large specimens, mechanical stages with vernier reading of 1/10 mm, and high-precision mechanical stages that permit the reading of 1/1000 mm on the measuring knobs reportedly combine for added versatility and accuracy. The total range of vertical adjustment is said to be sufficiently great to permit comparatively thick specimens as well as appropriate fixtures or accessories to be mounted on the stage. For continuous observation, the location and slight inclination of the screen have been chosen so that it will be on a natural level of vision with the operator in sitting position. Standard screens are offered in a choice of eight variations—from plain to vernier or angular reference lines. All screens are said to interchange readily and always maintain exact magnification.

RANDOM TUMBLE PILLING TESTER
(Atlas Electric)

A new laboratory instrument which produces pills and fuzz which correlate well with actual end-use performance in respect to number, size and appearance. A one-hour test reproduces the pilling produced in 300 hours of actual wear.

Random Tumble pilling tester

TURBO DYEING MACHINE "H"
(American Thies)

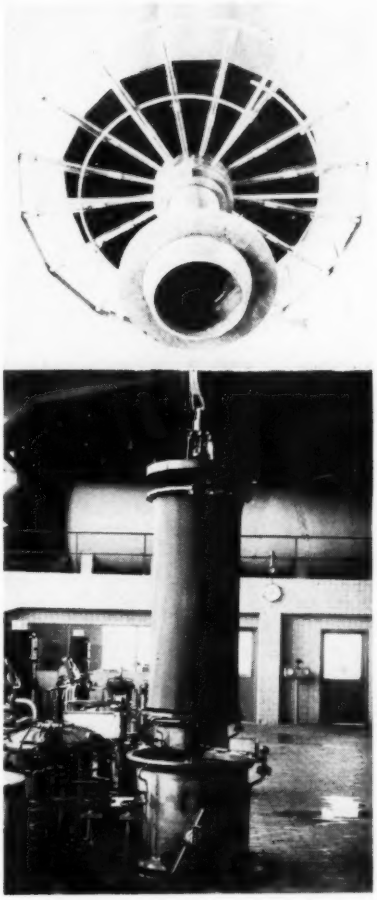
Liquor circulation is effected in both directions without 4-way valve in this machine, which features an entirely new turbo pump with mechanical seal. It is suitable for dyeing cheeses and beams of all densities. The machine can be used for open-circulation dyeing as well as for high-temperature dyeing. Static pressure equipment is optional.

The unit was displayed at the May 1957 Hannover Industries Fair and will be available on the U S market in 1958. Patents applied for.

Turbo Dyeing Machine "H"

CARRIER FOR HIGH-TEMPERATURE YARN-DYEING MACHINES
(American Thies)

An additional device for piece dyeing of synthetics on high-temperature, yarn-dyeing machines. This is a carrier on which all kinds of piece goods, ranging from fine synthetic fabrics to heavy worsted cloths, can be dyed with a most favorable liquor ratio either below or above 212°F. Perfect penetration with no risk to lose the natural handle of the material is claimed. The carrier can be used on Thies yarn-dyeing machines. The device is also offered for use on the Turbo Dyeing Machine. The unit was displayed at the May 1957 Hannover Industries Fair and will be available on the U S market in 1958. Patent applied for.



New device for piece-dyeing synthetics

THREE-ROLL LABORATORY PADDER
(Birch)

The machine is equipped with three 4"-diameter-by-18"-face ball-bearing pressure rolls, which are optionally available in rubber, neoprene, Hycar, or stainless-steel construction; a 304 S/S two-compartment immersion tank, which allows either single or double dip before each nip; extended neoprene side-drain tubes with shut-offs; stainless-steel wind-up and let off bars for handling test samples from roll to roll if desired; a direct coupled mechanical variable speed drive of 2 to 20 ypm speed range driving the middle roll; a panel mounted "stop-start" switch incorporating motor overload protection; pneumatic loading by low friction cylinders with panel mounted "load-lift" push button valve; air line filter, pressure regulator with gage; lubricator; and needle-bearing-mounted lever pivot pins.

The machine is shipped fully wired, piped and mounted on a steel base, which is said to allow it to be put into use instantly after plugging into any 115v-60cy-1ph wall outlet and connecting to an 80 psi air source. The pressure obtainable on the small rolls reportedly allows the unit to duplicate the results of full size production machines.

SIMPLIFIED BURLING TABLE
(Birch)

A new burling table designed to handle approximately 700 yards of fabric continuously. The machine is floor mounted and is equipped with an inclined-table-driven draw roll and ball-bearing guide rolls. The fabric travels down the table to the operator and is then folded into a truck. The drive is by a ¾ HP motor through a variable speed unit controlled by a switch connected to a floor-mounted treadle extending the full width of the machine.

STORAGE COMPENSATOR
(Birch)

A machine that augments the scope of the usual compensating gate between units of a dyeing or finishing range. The unit automatically stores a given number of yards of fabric in a processing range, taking up or releasing the goods as tension varies between the range components. In addition, the compensator will store enough fabric to permit stopping a portion of the range for roll doffing or other purposes without shutting down preceding or following units. Tension within the compensator can be adjusted to suit conditions, and an automatic slip clutch drive for DC field rheostats is available.

WASHOMATIC ROPE WASHER
(Cook)

A new washer for cloth in the rope form. Wash tests conducted over a period of several months of operation in a prominent Eastern finishing plant on three of these new washers show results which far surpass those from other makes, it is claimed. These washers are part of a high-speed continuous rope bleaching range built by Cook. Using as a basis the fact that efficient washing can be realized through repeated exchange of water in the cloth, Cook designed the washer to make full use of this principle. The washomatic principle is said to allow for thoroughly efficient washing with a minimum amount of water. The Washomatic is completely automatic in operation. Any desired degree of tension can be maintained automatically at any rate of production speed, it is stated. The washer is said to be mechanically simple and maintenance is at a minimum. The machine requires little floor space and is easily accessible for threading. Operating on cloth weights of 1½ to 7 yards per pound, wash test results reportedly indicate that only one of these new washers could be used in many cases where two washers of other makes are needed.

ROTOMATIC UNIT
(Cook)

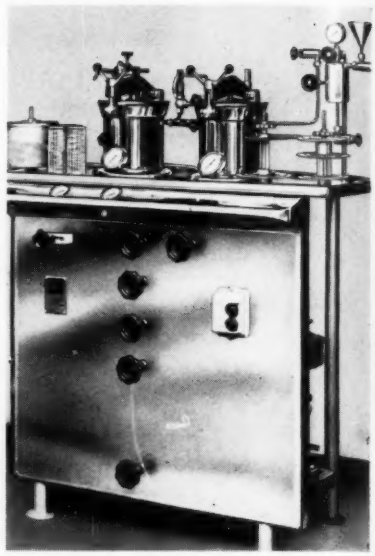
While primarily developed for open-width steaming and storage of heavy fabrics in continuous bleaching ranges, the Rotomatic Unit reportedly adapts itself equally well for other continuous wet finishing processes, such as desizing and scouring.

The Rotomatic Unit is designed to replace conventional open-width J boxes and multi-tier conveyors. Listed among the many advantages claimed for the Rotomatic Unit are the following:

a) Cloth damages from abrasion are eliminated, for in the Rotomatic Unit, all parts in contact with the cloth move with and at the same speed as the cloth.
b) Since there is no concentration of cloth weight sufficient to cause damaging creases, these are not a problem in the Rotomatic.
c) A unique method of piling cloth into the Rotomatic assures free-flowing removal of the cloth at the delivery side at uniform tension and without "plucking".
d) The cost of the Rotomatic Unit will be only about 50% that of a multi-tier conveyor and will require less than half the floor space.
e) The Rotomatic Unit can also be used for storage of cloth in the rope form.

LABORATORY DYEING MACHINES
(Cosa)

These machines reportedly provide a versatile and dependable means of pretesting dye formulas and techniques on any textile fiber in any form. Made by Scholl Ltd, these laboratory dyeing machines are exactly proportioned to full-size production machines. By pretesting with these machines dyers can carry out subsequent, full-scale dyeing without stopping for changes or corrections. Dyeing reportedly can begin above or below the boiling point and be carried on with or without pressure. Dyestuffs and chemicals can be added, and samples taken at any time, without interrupting the dyeing cycle—even during high-temperature dyeing, it is claimed. By means of the overflow and reserve tank a new bath can be prepared while dyeing is continued in the main pressure kier. A window permits constant observation of the liquid within the machine. Scholl's largest laboratory machine is designed specifically for the research departments of dyestuff manufacturers. The machines are constructed of acid-resistant stainless steel. They are said to be easy to service and extremely low on maintenance.



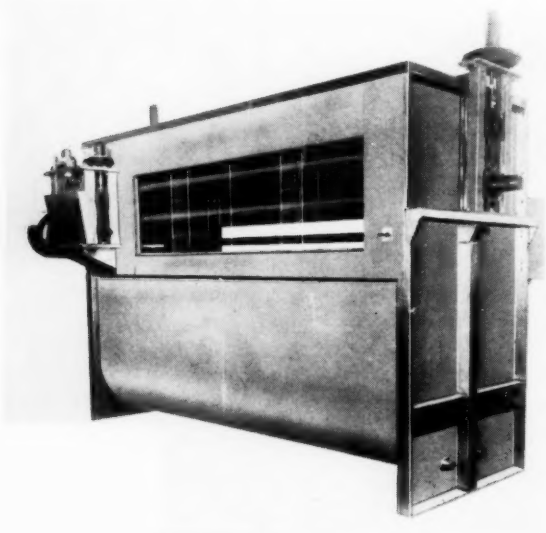
Scholl laboratory dyeing machine

OVERFEEDING HEADS
(Cosa)

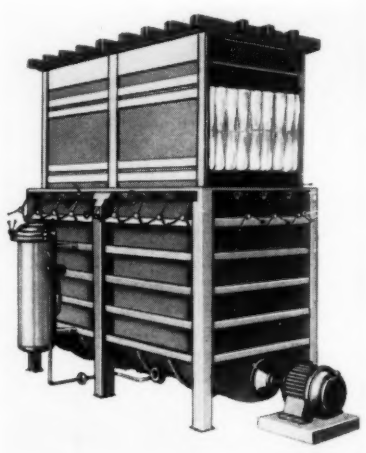
Can be used as an accessory to any tenter. This overfeeding apparatus is separately driven and manually controlled by a friction clutch. It reportedly provides a positive overfeed of up to 40% or −5% with pin-on-pin action. It is claimed that there is no possible variation from desired amount of overfeed once the machine is set. It can be operated at speeds up to 120 yards per minute.

SCHOLL SKEIN-DYEING MACHINE
(Cosa)

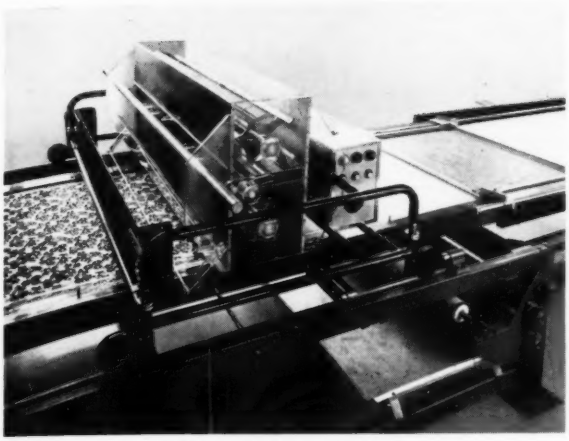
In this compact skein-dyeing machine the yarn carrier acts as a cover. This permits high temperatures, high pressures and complete penetration of the dye liquor into the yarn—resulting in completely uniform color impregnation, it is claimed. Corresponding uniformity of dye liquor circulation reportedly permits no variation among and between the skeins. The Scholl Skein Dyer comes in sizes ranging from 50- to 250-lb dye lots and can be coupled to other similar units—giving tandem operation. It is a precision machine with full temperature and pressure controls.



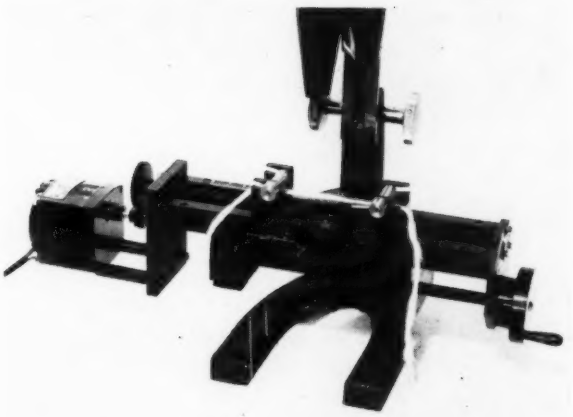
Washomatic rope washer



Scholl skein-dyeing machine

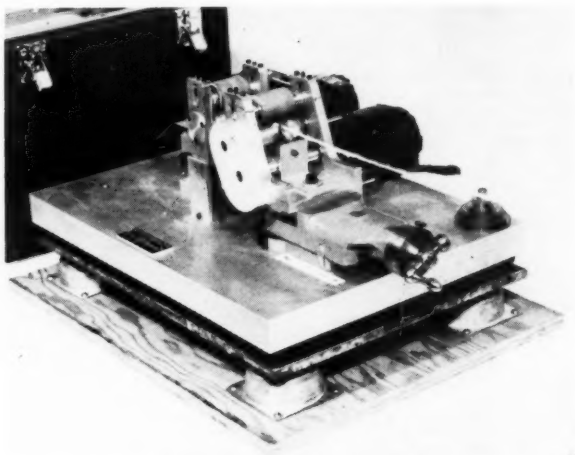


Saladin flocking machine



Model CS-87 visual wear tester

Vollenweider double-head shearing machine



Model CS-83 cohesion tester

SALADIN FLOCK-PRINTING MACHINE
(Cosa)

The electrostatic flocking and electrostatic flock recovery in the Saladin Flock Beamer FO-2 are said to result in an upright pile of uniform density providing clear contours and excellent definition of design. This machine will flock all types of textile fabrics. Flock falling on non-adhesive areas is automatically returned to the flock reservoir by an electrostatic recovery system. This recirculation system also prevents excess flock from gathering on top of previously flocked areas, it is claimed. The machine reportedly provides immediate advantages of increased production and a finer quality of flocked material.

LAY-ON-AIR DRYER
(Cosa)

Unique, aerodynamic construction of the Vits single-pass, forced-convection "Lay-on-air" system reportedly provides maximum possible efficiency in the high-speed drying of all fabrics. A perfectly balanced "drying focus" permits quick drying of even the most sensitive fabrics without distortion or mutilation, it is claimed. It is further claimed that production is increased, quality improved and floor space decreased. Speeds of 100 yards per minute or higher can be obtained. Evaporative capacity is up to 90 lbs of water per square yard of dryer per hour. Also is said to be excellent for curing, heat-setting, polymerizing, direct dyeing in one pass and other finishing processes.

VOLLENWEIDER HP1 SHEARING MACHINE
(Cosa)

This unit is especially designed to shear knitted pile fabrics. Arrangement of the shears reportedly permits completely uniform shearing over the entire surface area without varying the height of the sheared pile. Construction of the unit is said to provide high production and low maintenance cost—with up to 50% reduction in power requirements. This machine can be incorporated with semi-automatic units and can also work in tandem with other units.

VITS DRYING TENTER
(Cosa)

This tenter reportedly permits higher speeds and complete uniformity in the drying, finishing, curing, polymerizing and direct dyeing of all textile fabrics. A completely balanced high velocity drying focus is said to eliminate stagnant air zones and prevent any color migration. A mixture of 65% steam and 35% air at 300° to 400°F effectively prevents any oxidizing, overdrying and weakening of the fabric, it is claimed. Combination pin and clip chain operates with automatic change-over for either application. Chain speeds possible up to 250 yards per minute. Overfeeds of +40% to −5%. Evaporative capacity of 750 lbs of water per hour in one section.

VISUAL WEAR TESTER (MODEL CS-87)
(Custom Scientific)

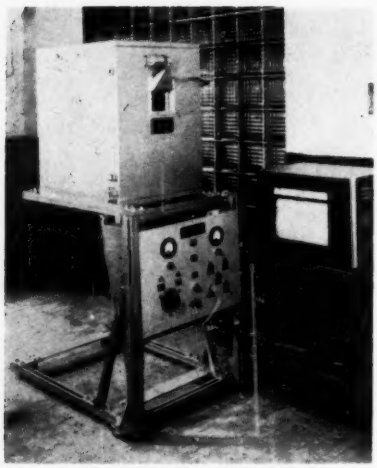
The Visual Tear Tester allows the technician to observe under a microscope the tearing and drawing properties of yarn, paper, etc. It may be mounted on any microscope having a plain stage. The Tester consists of two cam-acting jaws mounted on ways driven by a reversible synchronous motor through a ball-bearing lead screw. A scale is engraved on the unit to indicate jaw separation up to 8 inches in increments of 0.10 inches.

COHESION TESTER (MODEL CS-83)
(Custom Scientific)

Custom Scientific Instruments, Inc and West Point Mfg Co have entered into an agreement which will allow CSI to manufacture the Cohesion Tester. This apparatus was designed to measure dynamic forces involved in the drafting of strands of textile fibers such as sliver and roving. Such information is useful in determining proper roving twist, and evaluating fiber finishes, and evaluating many different fiber characteristics and their relationship to spinning and yarn qualities, for determining the effect of moisture content of the drafting and for carrying out other basic studies in the drafting of fibers.

FRL ENVIRONMENTAL TEST CHAMBER (MODEL CS-90)
(Custom Scientific)

This apparatus, designed by Fabric Research Laboratories, Inc, consists of two units:



Model CS-90 FRL environmental test chamber

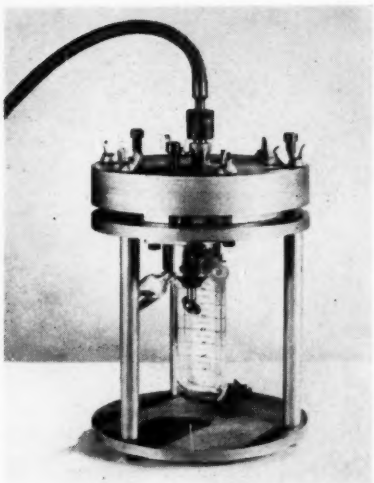
a) testing chamber mounted on a roll-away carriage; with the chamber on the same carriage is the control panel.

b) Recorder-controller relay rack.

The Environmental Test Chamber is shown in the illustration with the Brown Recorder, which is designed for the floor model Instron. The two units are mechanically independent but are connected electrically. Lead wire from the iron Constantan thermocouple in the testing chamber, and the control relay circuit run between the Brown Recorder-Controller and the carriage. Range: —90°F to +700°F; sample size, 10"; rupture extension: 80%. Besides the two basic units there are a number of small parts and fixtures which specifically adapt the apparatus for use on the Instron Tester. They include a load-cell pedestal, extension cable, safety-switch stop rod, and others. The two major units, however, are completely operable, without these small parts, permitting the use of the apparatus in any location as an oven or cold chamber if desired. The testing chamber is a two-compartment electric oven when used for temperature above ambient, and a two-compartment ice chest when used below ambient. The chamber itself is divided vertically into two compartments. The front compartment is the operating space whose temperature is to be controlled. The rear compartment contains five 600-watt resistance heater coils when the apparatus is used for high temperature. When sub-ambient temperatures are employed, the coils are removed from the rear compartment and dry ice is loaded into the compartment through a small rear door. The top, bottom, side and doors are constructed of two one-inch thickness of Johns-Manville Marinite with an aluminum foil interlayer. The air flow and compartment arrangement for both the floor model and table model are basically the same. The range of the Model CS-90 for the table model Instron is —90°F to +700°F. Working space allows for testing five-inch samples with up to 100% rupture extension. This model has been so designed to permit the Instron to be used on the same console whether the test chamber is being used or not.

DOW GAS TRANSMISSION CELL (MODEL CS-89)
(Custom Scientific)

Developed by the Plastics Technical Service of The Dow Chemical Co, the Dow Gas Transmission Cell is intended to measure the gas transmission rate of plastic sheeting and plastic coated papers. This cell, required equipment and method appear in the ASTM designation D-1434-56T "Tentative Method of Test for Gas Transmission Rate of Plastic Sheeting." The redesigned cell has three advantages over the original cell. These advantages are: 1) Removable cell manometer system. 2) Adapter for fast and slow gas transmission rates. 3) Vacuum Valve mounted more rigid at the top of the cell. With a removable cell manometer system, the technician can clean the system easier and better. This arrangement prevents breakage in shipment and allows the technician to replace a damaged system without the aid of a qualified glass technician.



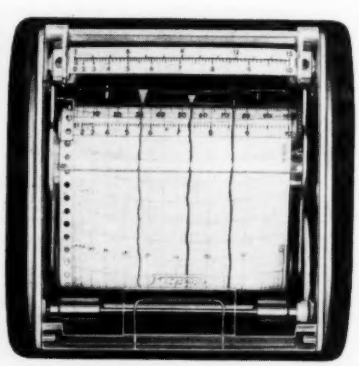
Model CS-89 Dow gas transmission cell

The adapter arrangement allows for fast and slow transmission rates to be run by the same cell. There are two adapters furnished with each cell. One maintains the void volume at a minimum and the second increases the void volume by a factor of ten. The new position for the vacuum valve prevents mercury from entering the valve and reduces the possibility of breaking the manometer system in making connections and opening and closing the valve.

NEW CONSOTROL FEATURES
(Foxboro)

For greater operating convenience, six new features have been added to the standard panel-type Consotrol instruments. Two of these advances reportedly permit greater recorder flexibility. First, the Model 53 and Model 54 (pull-out) will accommodate three pens so that three measurements can be monitored on the same chart. Second, a Model 54 Consotrol recording control station can be tilt-mounted for use in console units. Two automatic control developments extend the number of control actions available with the Model 58 Consotrol controller. In addition to proportional, reset and derivative, it is now possible to achieve Batch Stabilog and Auto-Selector actions. Batch Stabilog control reportedly permits the use of reset action on batch processes without "wind up" or "overshooting" at the start of an operating cycle. Patented Auto-Selector action reportedly provides a smooth transfer of reset control selectively for any number of related variables.

A new type chart tear-off bar and a new automatic-manual switch handle are standard with each instrument, while all other new operating features are available as optional equipment.



3-Pen Model 53 Consotrol Recorder

"JET STREAM" TENTER HOUSING
(James Hunter)

The Hunter "Jet Stream" tenter housing embodies entirely new design and construction features, resulting from an extensive series of studies of nozzle drying systems. It reportedly offers a maximum evaporative capacity, using either steam or a gas-fired heat source. Heavy-duty fans are mounted overhead with heaters and screens in a penthouse. Plenum chambers located above and below the tenter frame rail split the air. Nozzles are placed to provide maximum heated air velocity, and still permit return air to travel at low velocities. It is claimed that, as a result of this design, the application of heated air is maintained evenly across the width of the fabric; migration of resins or dyestuffs is eliminated; and excessive drying at cloth edges is avoided. The Hunter "Jet Stream" tenter housing is designed to fit any conventional clip tenter frame.

RECIPROCATING CONTINUOUS DRY MILL
(James Hunter)

This compact, new continuous dry mill is designed to be placed in line with a carbonizing range and operated by the carbonizer crew. The cloth is introduced and removed from the machine by two sets of nip rolls, running at the same rate as the carbonizing dryer. It is crushed between two sets of rolls, which move the cloth in alternating directions. Two scrays inside the machine hold the cloth while it is being reversed. A detecting device at the bottom of each scray, instead of reversing the direction of the rolls, merely opens one set and closes the other. This refinement reportedly eliminates the need for costly electric reversal controls. No timers are necessary, since the amount of cloth left in the scrays activates the reversal.

The machine requires approximately the same space as that occupied by a batch dry crusher. However, results are said to be consistently superior to those attainable with a batch dry mill.

MODEL C COLOR-EYE*
(Instrument)

A combination electronic colorimeter and abridged spectrophotometer for the measurement of reflectance or transmission materials, ie, dyestuffs or fabrics. The instrument is used for color-matching evaluations of Fade-Omter samples and new formulations.

*Trademark

COLOR TOLERANCE COMPUTER
(Instrument)

This unit is said to rapidly and actively convert tristimulus colorimetric data with a single color tolerance value ΔE (NBS units). It also determines the lightness, darkness; redness, greeness; yellowness, blueness values.

LUNCOR FIG 2601 SOCKET END VALVE
(Lunkenheimer)

This new Luncor socket-end valve is available in sizes ½ through 2 inch, and is read-

Luncor Fig 2601 Socket-end valves

ily installed in PVC pipe lines by welding with commercial solvent cements. It is rated 125 WP and 140° F—identical to the Luncor Fig 2600 valve with screw ends. The manufacturer states that these money-saving, high-performance valves have been particularly successful in handling common corrosive solutions in chemical processing and industrial operations. The high strength-weight ratio of Luncor PVC valves reportedly gives them rigidity comparable to metal.

RHE HEATSETTER
(Radiant)

The RHE Heatsetter employs the newly developed "thermal shock" principle to control the pilling of Dacron blends by heat-setting these fabrics at high temperatures and short exposure time. It does this with RHE Electro-Ceramic radiant heat applied in close proximity to both sides of the fabric. Under these conditions, fabrics of various weights and construction reportedly reach setting temperature of 400° to 425°F within 1 to 4 seconds.

The Heatsetter is claimed to offer these advantages over conventional heatsetting methods:

1) Natural fibers are unaffected.
2) No dye sublimation.
3) No yellowing of finishes.

Piece dyed or yarn dyed blends may be heat-set with complete uniformity, without any tendency of dyestuffs to sublime and with quality vastly improved, it is stated.

The RHE Heatsetter is versatile. In addition to controlling the pilling of Dacron blends, it is used to cure crease-resistant resin finishes, to set synthetic fabrics, and to cure pigment-color resins. It also is said to offer great advantages in the Thermosol dyeing of blend fabrics.

Speed of heatsetting depends upon fabric weights and temperatures employed. Operations today run from 20 yards to 65 yards per minute. Greater speeds are attained by adding more heat. Machines are engineered for roll-to-roll operations, or for operations out of and into trucks, or for use in range with other equipment.

The Heatsetter occupies minimal floor space, permits one-man operation and carries a very low price tag, it is claimed. The manufacturer suggests that, in these ways, it meets the economic needs of the textile industry for low-cost, high-speed finishing.

Terg-O-Tometer

TERG-O-TOMETER
(U S Testing)

A practical "simulation" device for investigations of the detergency process. For evaluation of soaps, detergents, dyestuffs, surfactants, cleaners for textiles and other materials; determining washability and colorfastness of textile materials or optimum conditions of cycling and other process variables. It is applicable to experimental formulations or to finished products, and may be used as a research tool and/or a practical quality-control device. Other outstanding features are the unit's economy, validity (controlled simulation) and reproducibility. The Terg-O-Tometer consists of a thermostatically controlled controller, constant-temperature bath in which four removable, stainless-steel beakers are mounted, each fitted with a motor-driven agitator of scaled proportions. It is now equipped with an automatic timing device, which can be set for any length of agitation.

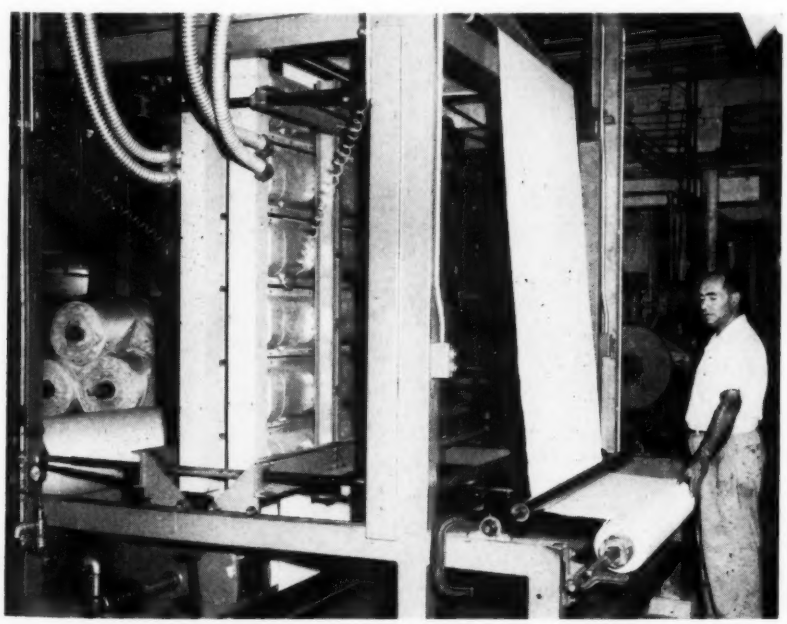
Operating characteristics: Temperature, 25-100°C ± 1°C; Agitator speed, 40-200 cycles/min; power supply, 110-230 V, 60 cycle, AC; beaker capacity, 4 x 2000 ml.

LAKE TAPE-SEALING MACHINE FOR CANS
(White)

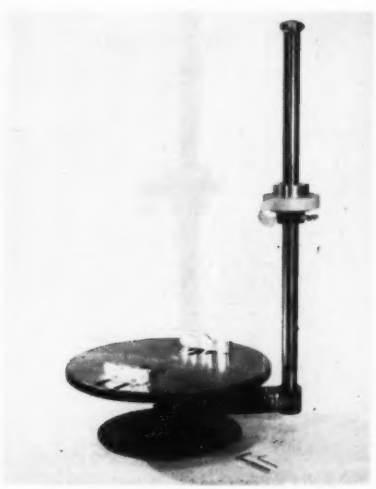
A rugged, semiautomatic, production-line machine for use with all types of pressure-sensitive (masking, acetate cellulose, acetate fiber) tapes. Adjustable foot-pedal tension locks and releases can. One hand revolution of the swivel arm applies tape neatly and evenly under adjustable tension. Said to be easy to install and maintain. Users report 10 to 14 sealings per minute. Models CS-12 (12" plate) and CS-17 (17" plate).

LAKE TAPE-SEALING MACHINE FOR CANISTERS AND DRUMS
(White)

Drum is held securely for taping by adjustable, self-releasing spring clamp. Plate is 17" diameter. Users report 5 to 7 sealings per minute.



RHE Heatsetter installed in a finishing plant which mainly finishes Dacron and cotton blends (shirting materials)



Lake tape-sealing machine for canisters and drums

HIGHLIGHTS OF THE PAST YEAR

P J WOOD
Technical Director
Royce Chemical Co
Carlton Hill, N J

EDITOR'S NOTE: It is a pleasure to bring to our readers for the eighth consecutive year Mr Wood's "Highlights". Many of Mr Wood's observations cover material that has not appeared elsewhere in the American textile trade papers.

SINGEING

ONCE again I take my overworked quill in hand to write you the results of the past year's collection of matters concerning our industry which seemed worthy of notice at the time. Most articles of this type carry a voluminous bibliography at the end, which few people read perhaps. Here are two at the beginning of this article, which may insure that they will be read and which we can highly recommend to all who are interested in the subject of this section:

Holden, G E, "Singeing of Cotton and Formation of Oxycellulose," *J Soc Dyers Col* **45**, 205, (1929).

Travis, John T, "Uniformity of Singeing," *Am Dyestuff Reptr* **20**, No. 2, 33-34, 61-63 (1931).

Both these men emphasize the *importance of singeing* and insist on the extreme *necessity of good singeing*.

Not too many people seem to be endeavoring to improve the singeing machine in these days, to transpose Shakespeare, "when service sweats for meed, not for duty." It is refreshing, therefore, to note the efforts that have been made to do just this by one important European textile-finishing-machine manufacturer.

In line with the modern tendency toward automation, one of the objectives of this modern singeing machine is to fall in line with the idea of continuous operation. But, in so doing, sight is not lost of the matter of turning out the cleanest work possible together with the utmost economy of fuel.

Figure 1a gives an idea of the appearance of the plate singeing unit, which can be used alone or in conjunction with the flame singeing unit, together with other appurtenances the maker thinks add to the efficiency of this machine or combination of machines.

What the maker has not thought of is hardly worth mentioning. There is a heating unit for warming the cloth before it enters the brush box, which sets each hair on end so that the machine can remove each and every unwanted fiber by its complete combustion. What escapes the front and back gas singeing passes cannot fail to be eliminated by the back and front plate singeing devices.

The complete arrangement of both types in combination is shown in Figure 1b, from which it is fully apparent that it can be used in all kinds of permutations and combinations, and the machine is run at any desired speed to provide the correct treatment for all weights and constructions of fabrics.

BLEACHING

In the language of the street the J-box type of steamer "is not all that it is cracked up to be." While it produces quite good merchandise, on the whole, it still leaves much to be desired.

From time to time, other forms of apparatus for steaming, first the causticized goods and later the peroxide-impregnated goods, are made

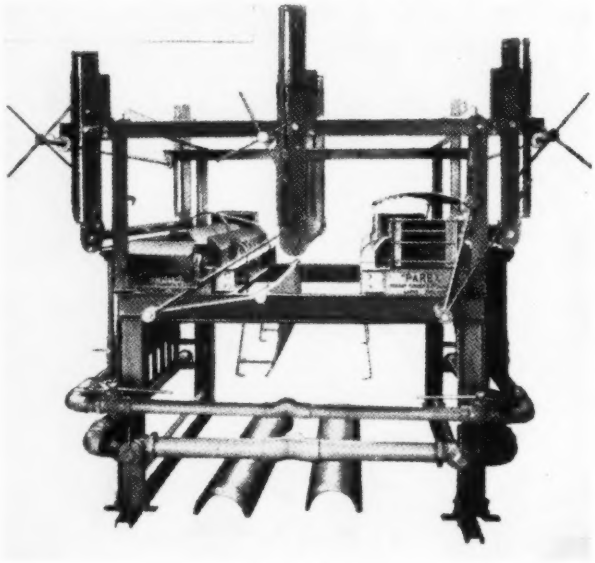


Figure 1a

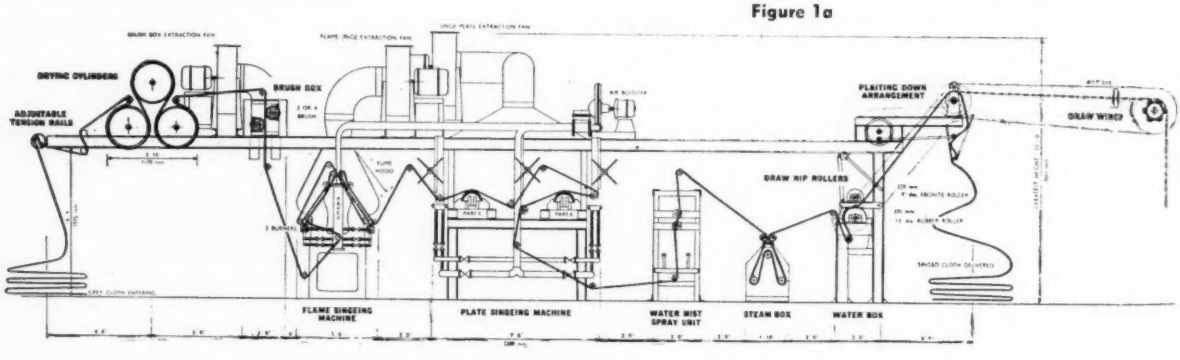


Figure 1b

and tried. Very often these new forms overcome one of the difficulties encountered by the old J box, but fail to eliminate others; at times they really accentuate other defects, so that the life of the bleacher and of the bleaching machinery constructor is far from happy. One of the most recent suggestions is that presented pictorially in Figure 2a & 2b. In this apparatus, the dragging of the cloth from a more or less tangled mass is quite evidently eliminated; there should be no more trouble from abrasion.

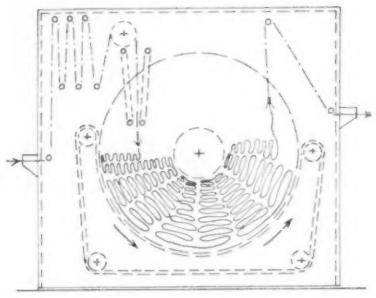


Figure 2a

The cloth is not accumulated in the chest by concentration of weight of hot wet cloth on hot wet cloth, so a cloth free from creases that are practically *finished* into the cloth should be possible.

This same condition should assure a free-flowing egress of the cloth from this new type of accumulator; no more "plucking."

It is said that the cost of this accumulator is only about half that of the conventional, stainless steel J box, and that it occupies less floor space—two points of paramount importance.

The same device is used for goods in the rope form and also for goods in the open width. Figures 2a & 2b illustrate both these operations. Although they do not show how the goods are kept in "apple-pie" order, it is easy to imagine that, in starting the machine, some device such as a board is used to keep the first layers of goods from dropping into the bottom, semicircular part of the container, this being removed when the bottom of the machine is filled and it is time to lead the end of the goods out of the apparatus.

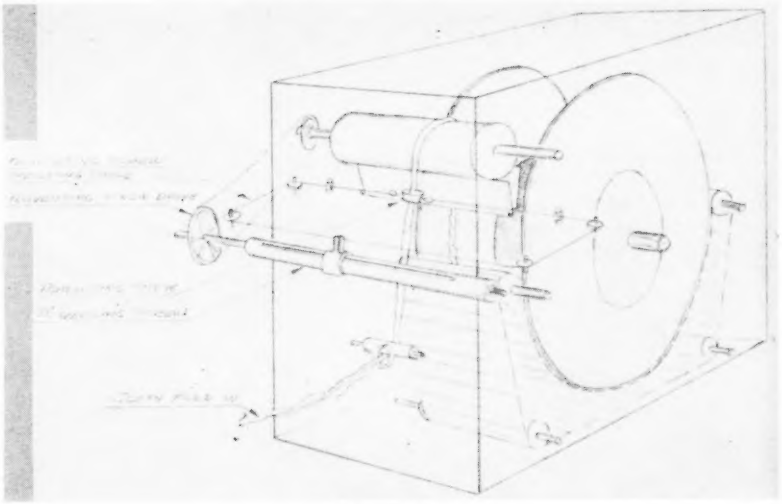


Figure 2b

It would seem to be suitable for accumulating enzyme - impregnated goods during the lying-over period, during desizing. Heat could be applied to maintain the optimum temperature, or, at least there would not be the same loss of heat that is met with in the conventional bleachworks bin.

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We have read the patent covering the complicated but effective device that is used to accomplish accumulation of sufficient yardage in the steaming chamber to give adequate steaming time in that continuous bleaching system that was described in "Highlights of 1955." Figure 2c shows the accumulator as given in the patent. To describe fully the working of this apparatus would require more space than is available in this review. Suffice it to say that the principle depends on rolling the length of goods, that is, a 2-ply roll, on the upper roll shown in the sketch. When the required length of cloth is beamed on this roll, the complicated-looking, but easy-working gadget goes to work reversing the position of the top and bottom rollers, then one ply from the (now)

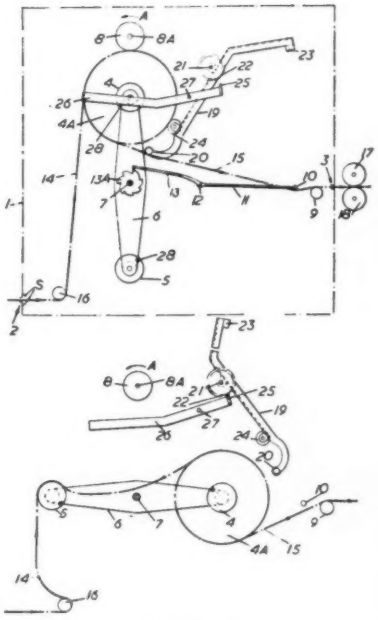


Figure 2c

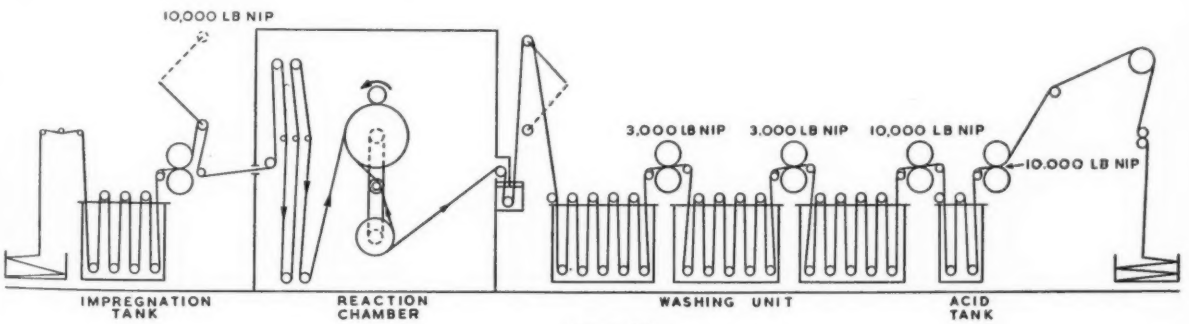


Figure 2d

full bottom roll is rolled onto the top empty roll, at the same time a new ply of untreated cloth is rolled on with it, so that a new 2-ply roll of goods is being built up. This 2-ply roll consists of one ply that has been half of the yardage on the first 2-ply roll, which was entirely built up of new, untreated cloth entering the machine from without. At the same time that one ply is leaving the bottom roll for a second run on the top roll, a second ply is running out of the machine to continue on through the rest of the operations indicated in Figure 2d.

Once the operation has been started by building the first 2-ply roll of cloth on the top roll, the operation becomes thereafter automatic and continuous. Like the brook, it "goes on forever."

DYEING

It is only once in a while during the march of the years that we come across what might be designated a revolutionary change in the form of the dyeing machine. Here is one that is so new that it is impossible to pass judgment on it. Time and experience alone can do that.

According to the story about this unique device (see Figure 3) that appeared in our respected contemporary, The *Dyer* (London), one would be led to the conclusion that this apparatus was originally planned for the dyeing of ribbons or tapes. Particular reference is made to the dyeing of Terylene ribbons (Terylene corresponds to our Dacron), which seems to require the application of high temperatures for its best processing.

Another synthetic fiber that has evidently been successfully handled on this machine is nylon, in which case 14 strands of ribbon seem to have been run simultaneously at the rate of 15-60 *feet* per minute, *per end*.

This looks as if it might be necessary to pass the goods two or more times through the machine.

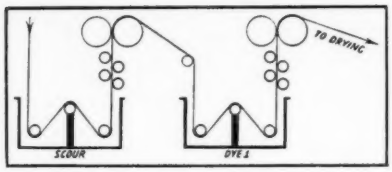


Figure 3

The principle of the machine seems to be impregnation with the dye liquor followed by application of heat and electrical energy by means of carbon electrodes that are *not submerged* in the liquor.

The maker claims a production of 12 yards (or more) per minute, that is, 720 yards per hour, at a cost of 2 shillings (24c at present rate of exchange). This does not seem extortionate when one considers that this provides both heat and energy for completing the dyeing, and the statement is also made that the goods come off the apparatus dry enough to enter the dryer without hydro-extraction.

The manufacturer, replying to the objection that electric current is costly, points out that, when it is applied right on the exact spot where it does the most good, it then becomes most economical.

FINISHING

MAKE-UP AND SELVEDGE PRINTING MACHINE———Formerly, worsted cloth was handled three times to accomplish three objects: 1) measuring, 2) printing the trademark on the selvedge by hand, and 3) rolling the goods on thin flat boards.

This machine is designed to do all these operations continuously at the rate of 35 yards per minute, which cuts down the labor requirement considerably. In one plant where the inspecting, measuring, doubling, selvedge printing and rolling are done, the installations of this machine results in a reduction of 50% in labor.

The machine takes doubled cloth in the plaited form across an inspection table, which is fitted with a special device to keep the cloth neatly doubled. In addition, there is a selvedge guider to keep it straight.

The printing units take blocks up to 4" wide by 8" long. They are hydraulically controlled. By an ingenious arrangement the printing is done on a portion of the cloth that is *not moving* relative to the printing head. In this way it gives perfect impressions even on doubled cloth. The pressure of the printing block is easily adjustable as is the temperature of the block. Special foil of any color can be used. Pressure and temperature gauges are provided, and a yardage counter to measure the cloth.

Figures 4a & 4b show two views of the machine in operation.

PRINTING

SMALL SCREEN PRINTING MACHINE———Here is an apparatus that can be run, for single-color printing or flock printing, by one operator, which would seem to this writer to be the ultimate for some ablebodied man who has been retired by rule and still feels like using his artistic sense and his brawn to profitably employ his retired days. This should provide satisfaction plus.

The machine, as illustrated in Figure 5a, shows what is necessary for producing one-color prints or flock patterns. This shows the form required for hand operation of the color distribution. It is possible to obtain the necessary parts so that the color paste can be applied automatically, the only work required of the operative being to keep the color reservoir filled.

The drying is done electrically in the box at the end of the range and

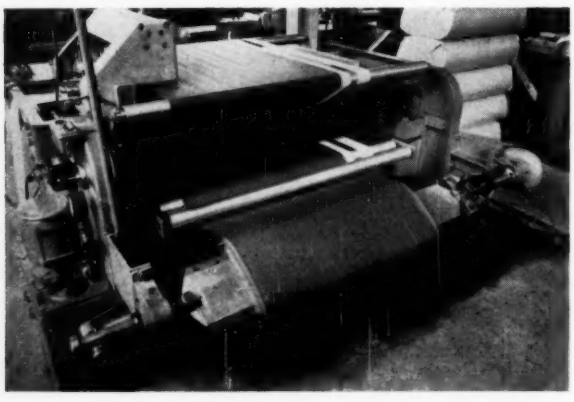


Figure 4a

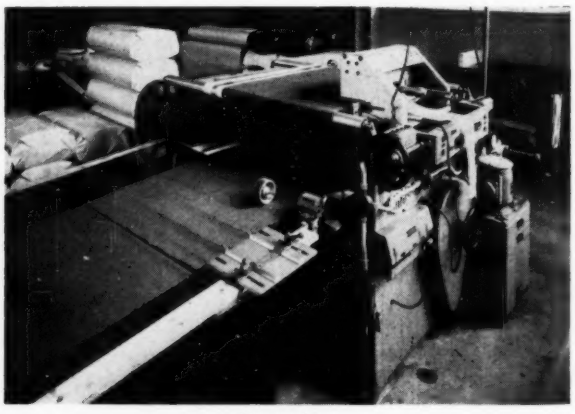


Figure 4b

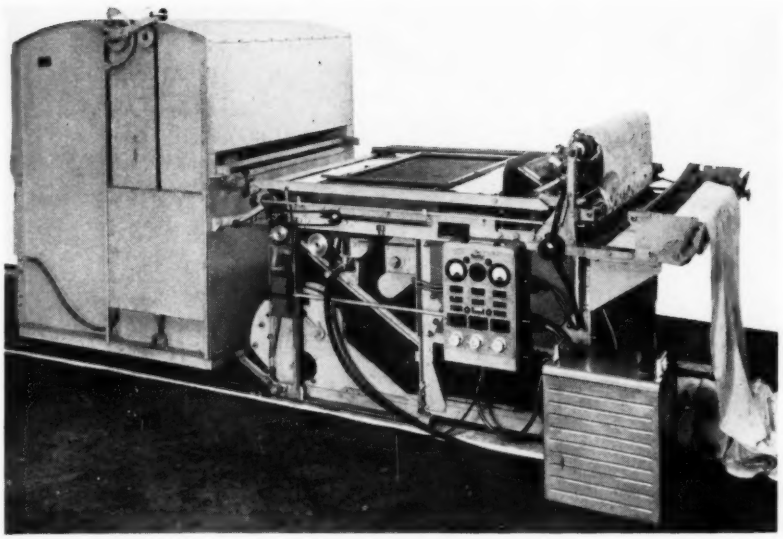


Figure 5a

is brought about by infrared lamps combined with a draught of electrically heated air drawn through the dryer by an electric fan.

The manufacturer makes an attachment for flocking, which follows application of the necessary pattern printed with adhesive, after which the flock is strewed on the surface of the fabric, the excess being removed by electrostatic means and returned to the flock container.

In order to produce combination print and flock effects, three printing tables are necessary. The first one is used for printing the regular print color, the second is for drying the print color so that no flock will adhere to the printed part. For this purpose an electric drying device is provided to let down over the second printing table. The third print table is used for printing on the flock adhesive. Then, when the cloth passes through the flock distributor, the flock adheres solely to the adhesive printed areas; the unprinted parts, and those printed parts previously printed with color, remain clear of flock.

Undoubtedly, the printing in the case of this combined style would have to be done with the modern pigment colors; in which case, passage through the dryer could be arranged at such a temperature that it would dry the goods and cure the pigment vehicle too.

Figure 5a shows only a single "printing table." Actually the printing is done on a movable belt, which is moved from one printing surface to the next automatically, but the manufacturer says it can be made for any number of colors up to 6. And the operation of the "scrapers" can be done by hand, or it can be done mechanically, although this is not shown in the photograph.

FLASH AGING——In any consideration of "flash" aging, the apparatus to be used comes into question.

The best form of apparatus apparently is one in which the printed goods are padded through the necessary reducing agent, and most people seem to have decided that sodium hydrosulfite is the ideal agent for the purpose, stabilized, of course, with caustic soda or other alkali, and passed into the ager with the least possible delay.

The prime requisite of such steam ager is that the face of the goods shall not come into contact with any roller until the aging is fully accomplished. As a matter of fact, it is usually arranged that the goods, on emerging from the ager, shall plunge directly into the open-width washer, or be sprayed while entering thereinto, before the printed side of the cloth is touched by any roller, for fear of the danger of mark-off.

A German printing machinery engineer has invented a novel method of handling this problem, which deserves more than a cursory glance.

He says a process time of 10 seconds steaming is sufficient when applied on his "Reaktor" (see Figure

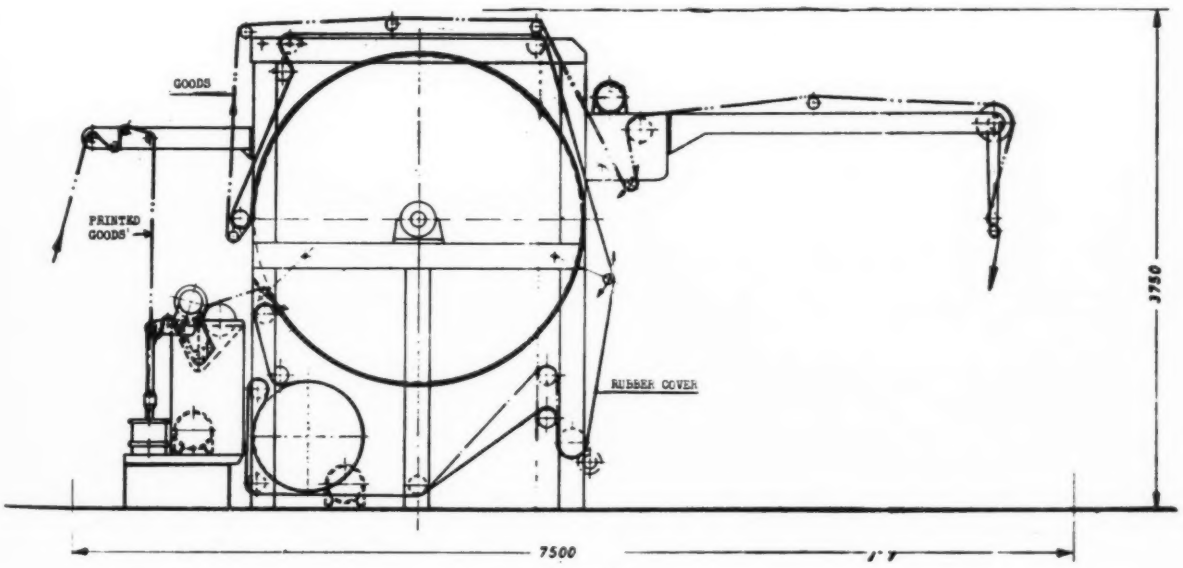


Figure 5b

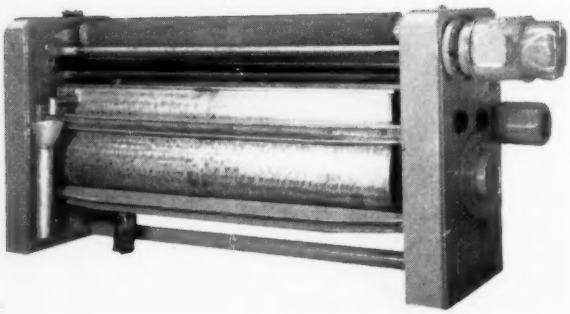


Figure 6a

Figure 6b

5b), to give satisfactory flash aging for treating prints of vat colors containing no reducing agent. Likewise, the claim is made that passage through the machine of pigment pad-reducing pad vat dyed goods is sufficient to develop full-strength shades.

The machine, strongly reminiscent of the Palmer finishing machine, or the compressive shrinkage machine, consists of a 2-roll mangle or padder, with a trough of small dimensions, through which the printed or vat-pigment padded goods are passed to acquire the necessary amount of the caustic-hydrosulfite solution, after which the impregnated cloth passes on its way around the large steam-heated drum of the machine, against which it is closely pressed by a rather thick rubber blanket. The fabric is rapidly heated to the reaction temperature and part of the water in it is transformed into steam.

The rubber blanket covers the fabric across its entire width, with a considerable margin to spare. So, the steam cannot escape from the space between the drum and the blanket, which is run at considerable tension. Air cannot gain ingress to the system because of this tension and on account of the steam pressure built up.

A machine having a cylinder diameter of 100 inches provides a covered fabric content of 8 yards, which, when 70-80% wet, provides sufficient steam to effect reduction without the employment of any other steam.

The short run is said to eliminate creases and to prevent lengthwise stretch of the fabric.

It is claimed that the Reaktor can be heated up to the running temperature in not more than 15 minutes.

WASHING

An English patent issued recently reveals several ingenious ideas of a German inventor and textile machine manufacturer in the way of better means of applying liquids to fabrics, conducive to improved penetration, or extraction of liquids or other materials that have to be removed from the cloth.

It looks as if it might be applicable as a washing machine for dyed or printed goods to remove excess surface-attached dye or print thickeners.

It might serve equally well for dyeing fabrics, especially such cloths as are difficult to penetrate on account of tightly twisted yarns of which they are composed or because the picks are so tightly woven into the fabric.

Your reporter has suggested frequently that, instead of abnormally high dyeing temperatures for coloring some of these hard-to-dye piece goods composed wholly or in part of the new synthetic hydrophobic fibers, it might be possible to employ vibrant energy, which would leave the goods more accessible than do the various forms of high temperature and pressure devices. This could be done by passing the material through *zones* in some part of the dyebath, where sonic or supersonic vibrations are generated. This apparatus seems to be one that might produce or approach the conditions suggested.

A very interesting lecture on this general subject was delivered by this inventor a couple of years ago, before the Machine Engineering Committee of the Gesamtverband der Deutschen Textilveredlungsindustrie at Wiesbaden, Germany. In this paper many ways of accomplishing the desired results were discussed. Now the inventor has translated some of his ideas into action.

One of these applications is shown in Figures 6a and 6b of the single unit and a battery of 5 units running in tandem. What looks like a calender roll in the photographs is actually a unique type of trough or tank to accommodate the perforated vibrating roller around which the cloth is led in and out of the trough. This roller, according to the patent, is eccentric, so that a wave motion is generated within the trough; at the same time, a special attachment on the motor driving the roller causes vibration of the system.

DRYING

Imagine the saving possible in maintenance charges on a drying machine which does with four cylinders as much as can normally be expected from a conventional 20-24 cylinder dryer. It is conceivable also that there must be less leakage from the 4 stuffing box steam connections of this machine than from 20-24 connections on the regular type of dryer.

In addition, it is quite likely that this machine may be more free from defects arising from migration, on account of the more rapid drying and from the fact that the goods are *dried on both sides* during the passage around each cylinder. This is accomplished by provision of an air-drying device, which fits snugly around the periphery of each cylinder. As the goods pass from can to can, the side of the cloth that is exposed to the surface of the cylinder and the air drying device changes, so that both sides of the material receive equal and uniform treatment, thus avoiding any tendency to production of a two-sided effect.

This simultaneous double drying system results in a considerable reduction in steam consumption, the hot air and vapor being completely recirculated.

As there are only four cylinders to be driven, it is obvious that the power requirements are low. The maker says the fans are of the high efficiency kind that use very little horsepower.

It goes without saying that this machine takes up much less ground space than the usual vertical or horizontal can drier.

The cans are constructed of stainless steel.

Figure 7a shows what the machine looks like. Figure 7b gives a good idea of the mechanical features noted and the way in which the cloth proceeds through the dryer.

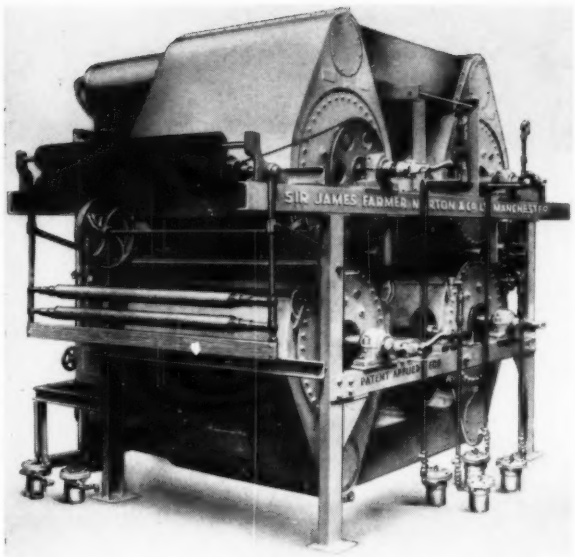


Figure 7a

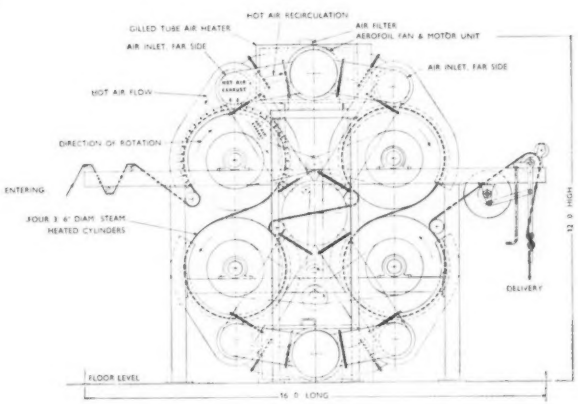


Figure 7b

INSTRUMENTATION

Someone may accuse us of looking far ahead into the space-ship age, but, as this writer has remarked before on several occasions, it seems that there is a distinct likelihood that there may be found, one of these days, a way in which ozone can be used for textile bleaching. And, when that day comes, there will be a real use for some method of automatically regulating the concentration of ozone in the apparatus in which it is applied.

Such an instrument is the ozone meter, which depends on the application of a highly scientific principle for its operation.

It depends on the fact that ozone is opaque to ultraviolet rays in the region of 2537 Angstroms. Two ultraviolet sensitive detectors are used in conjunction with a specially adapted ultraviolet lamp. The first detector receives radiant energy through air alone, while in the second detector the radiation passes through a fixed absorption path in an atmosphere of the gas being analyzed. Concentration of ozone in the sample is determined by measuring the unbalance between the two detectors on a 0-20 microammeter. The ozone concentration is read directly from the scale in milligrams per liter.

The instrument is shown in Figure 8.

Figure 8

LABORATORY APPARATUS

HIGH-SPEED MIXER——In common with many other laboratories, this laboratory has made good use of the well-known blender for many years. Its only limitation has been the small capacity of the container.

It is good to know that a commercial blender is now available, the stainless-steel container of which has a capacity of one gallon, which more than doubles its usefulness for many purposes. (See Figure 9).

Figure 9

The heavy-duty motor and blending assembly are *lifetime lubricated*, ie, they never require greasing and oiling. The switch has three speed settings, 14,500-12,000-9,000 rpm. The motor, which is enclosed in the base, is of 1½ HP. The device has the approval of the Underwriters Laboratories.

* * *

Since it occurred to someone that it might be feasible to dye some of the more difficult man-made fibers at higher-than-normal temperatures, a laboratory dye vessel that would make it possible to carry out this operation on a small scale has become necessary.

One of the best that we have seen to date is the type used daily in the dyeing laboratories of Imperial Chemical Industries' dyestuff division at Blackley, England.

It appears to be the invention of J G Graham and G W Jamin, and they seem to have done a right good job.

The objectives of these two engineers were:

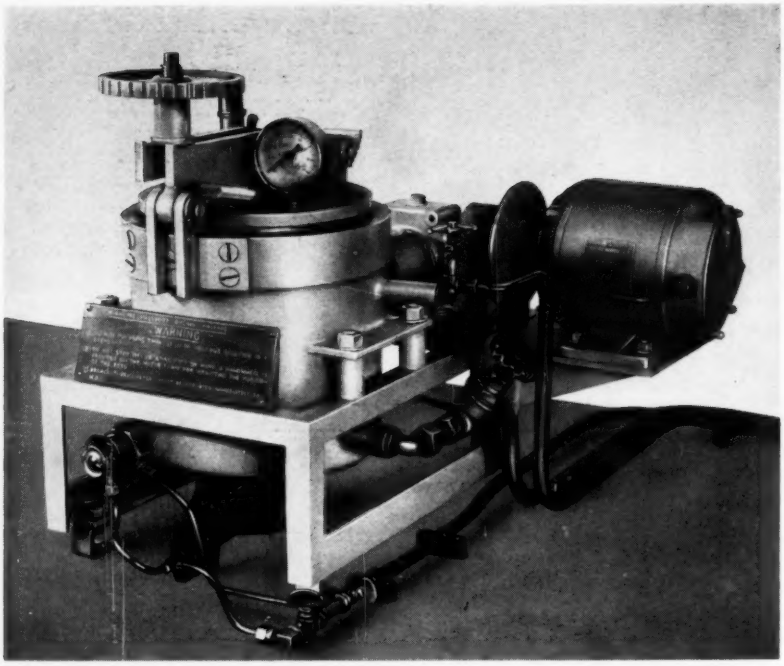


Figure 10a
Apparatus closed

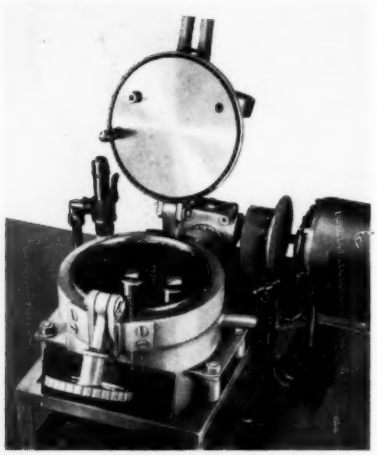


Figure 10b
Apparatus open

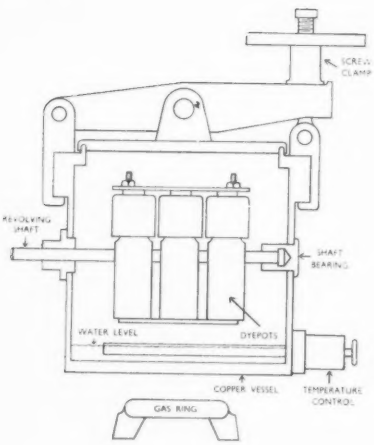


Figure 10c
Cross section of line drawing

1) Simplicity of design for safe operation and easy maintenance.

2) Adequate circulation of liquor in the dyepots, and,

3) Rapid heating and cooling.

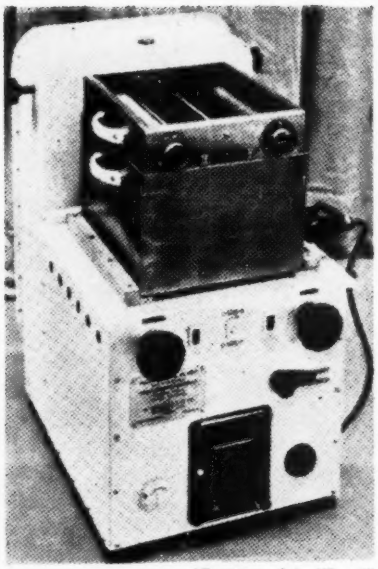
As will be seen by examination of Figures 10a, 10b, and 10c, they seem to have worked out a perfectly satisfactory way of doing just that.

In this particular type, there are three dyepots, each holding 100 cc water, so disposed in a steam chamber that they can be revolved in an ambient of steam at any required temperature. In the case of Terylene, for instance, a convenient range is from 120-130 C (250-265 F.).

When these gentlemen made public their report on this apparatus they stated that, since the installation of the first machine, approximately 14,000 dyeings had been made.

* * *

Another handy piece of lab equipment is a miniature jigger. (Figure 10d). This was also a development of the engineers of Imperial Chemical Industries. It is said to provide formulas which are really a reliable guide to the amounts of dyestuff required in the full-scale jig in the dyehouse, which is something to give thanks for, as the conventional beaker laboratory dyeing hardly provides even an approximation to the correct amounts.



(Courtesy of the "Dyer")

Figure 10d

The machine is electrically driven at a constant cloth speed, reverses automatically, and is electrically heated and thermostatically controlled. The ideal length of a narrow fabric is said to be ten yards, although the machine will accommodate up to 50 yards. After the cloth is loaded on one of the top rollers, the machine can be adjusted so that it will run for a specified length of time, to correspond with the time that will be required on the full-sized jig.

The driving mechanism and electrical controls are contained in the lower part of the apparatus, the jig itself being removable for filling, cleaning, etc. For filling, a detachable handle is provided for winding the cloth on one of the top rollers. Each roller is furnished with the necessary brake to steady the cloth as it rolls off the roller and winds up on the driven roller. A fabric up to 10 inches wide can be treated on the machine.

TESTING EQUIPMENT

Out of Switzerland comes a new type of wash and fulling fastness tester.

The test cells are constructed of stainless steel and are contained in a waterbath also of stainless steel. The heating elements in the waterbath are electric immersion heaters and are provided with automatic temperature control. By means of a special device, the samples are rubbed during the test and the pressure of this friction can be varied at will by adjusting the position of the weights on the bar. By addition of glycerine to the contents of the waterbath, it is

Figure 11a

possible to actually make wash tests at the boil.

Each cell in the apparatus is completely independent, so that each one can be operated with different cloth, bath contents and temperature, starting and stopping at various times without stopping the progress of the other tests being carried out in the other cells.

The testers are obtainable in different sizes to accommodate 2, 6, 12, 18 or 24 samples simultaneously.

Figure 11a shows one 2-cell machine, which can also be obtained in one-cell form having double the width; Figure 11b shows a multicell tester. Figure 11c shows the right and wrong way of attaching the sample to the frame that holds it in the cell so that it can be rubbed by the friction bar against the ribbed bottom of the cell.

This rubbing attachment is handy for testing the rubbing of pigment colors during washing. It is also used for checking the shrinking of the felting of knitted fabrics.

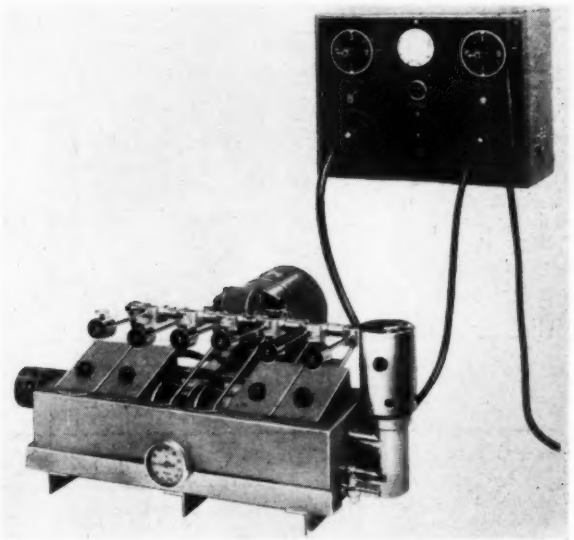


Figure 11b

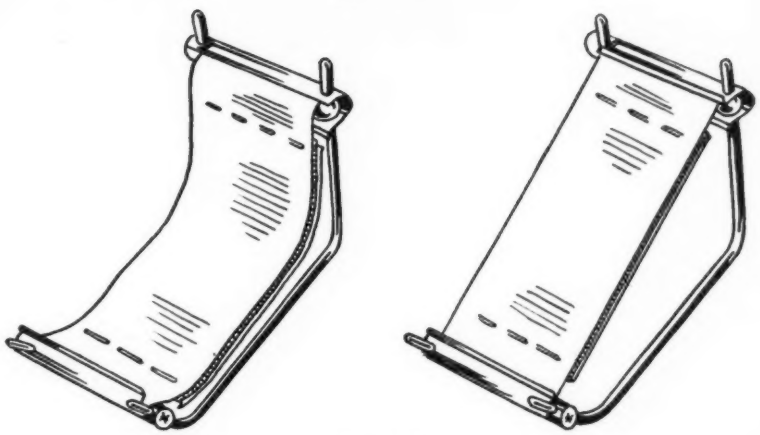


Figure 11c

Correctly fixed

Fixed in a wrong manner

ADDENDUM

NEW TYPE OF 3-ROLL PADDER ——Here is a padder in which the pressure of the two outer rolls is exerted on the lower and inner roll at will. (See Figure 12). The first nip can be inoperative and the second nip can be made to exert any desired pressure. On the other hand, the first roller can be pressed tightly against the second one so that this first nip will practically squeeze out the air, so that the foaming caused by carrying air into the liquor can be substantially reduced.

A small primary trough can be attached to the standard machine so that the first liquor can be applied therein, after which the second reagent is applied in the regular trough of the machine. A small pair of squeeze rolls on the primary trough serves to level out the first application, after which it is further evened by the first nip of the padder, before passing into the second reagent. *Example*: Naphtholating liquor in the

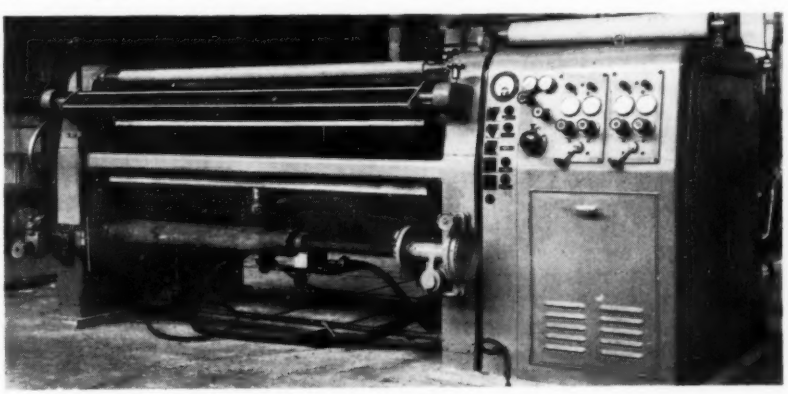


Figure 12

first trough, diazo-liquor in the main trough of the padder, following which the goods can be skyed, then passed into an open-width washer.

If desired, the machine can be furnished with forward and backward drive; this will make it possible to run the padder as a padder-jig.

The main trough under the 3-roll system can be lowered for washing out, during which time the rollers and their accompanying idler rolls are readily accessible and can be washed without trouble.

This V-shaped trough is double walled, making it possible to heat the device by steam.

When this apparatus is introduced into a train with other machines for continuous operation, it is provided with D C drive which gives greater flexibility in speed and speed control. Run as a single unit, it is usually run at 10 to 60 yards per minute, the speed being infinitely variable within these limits by means of a gear box, ratio 1:6.

The liquid level is kept constant by the automtic operation of an automatic regulator.—Q. E. F.

• PATENT DIGEST •

PAUL WENGRAF

FINISHING DACRON FABRICS ———Free Shrinking Followed by Hot Alkaline Treatment G,1

USPat 2,781,242 (Du Pont——Knapp—— Feb 12, 1957)

A "good handle" of a fabric is difficult to define. The preamble to this patent characterizes a desirable touch as "lofty" or the like. Dacron fabrics or other goods containing synthetic fibers are often unacceptable in this respect.

The current method, devised to improve the hand of Dacron fabrics, comprises a heat treatment under relaxed conditions followed by immersion in a warm solution of an alkali hydroxide or of an alkali salt of a weak acid.

The first step is carried out at 200-230° C in a pin tenter frame so that the fabric can freely shrink at least 3% warp- and fillingwise, becoming stiff and boardy in this operation.

The second step comprises a treatment with boiling aqueous alkalis or silicates, sulfites or phosphates. The fabric loses considerable weight in this part of the process, eg, between 10-20%. The handle proves to be much more pleasant following this treatment. Effects include better drape of the fabrics and lower flexural rigidity. The latter may be measured according to a method invented by Pierce in 1933, and further described by Hoffman and Beste in *Textile Research J* **XXI**, 66 (1953).

An example calls for treating an all-polyterephthalate fabric in relaxed condition for 2 minutes at 210° C, whereupon the fabric shrinks 8% warpwise and 9% fillingwise. After it was immersed for 15 minutes in boiling 5% Na OH solution, rinsed, treated with dilute acetic acid and dried at 95° C, the fabric had lost about 14% its original weight but was found to have an improved, more desirable hand.

Among the references cited by the Patent Office:

Brit Pat 652,948 (Imp Chem Ind ———Whinfield/1951) covers a method for improving the hand of terephthalate fabrics by a hot alkaline treatment (especially for very thin fabrics).

Brit Pat 610,184 (Imp Chem Ind/1948) calls for a wet pretreatment of terephthalate fiber fabrics at temperatures higher than those used in dyeing so as to avoid undesirable curling.

FLAMEPROOFING with Urea-Phosphoric Acid Condensates plus Methylolmelamines G,2,03

USPat 2,781,281 (Ciba Ltd——Berger——Feb 12, 1957)

Customary flameproofing processes reportedly have disadvantages in that the impregnating baths are not sufficiently stable and also in that the tensile strength and hand of the finished fabrics might be impaired.

The current patent protects the use of a flameproofing composition consisting of: a) an aqueous solution of a reaction product of urea with ortho-, meta or pyrophosphoric acids in concentrations between 12-48% (preferably 24-38%) solid content; and b) an aqueous solution of a methylolmelamine or a methylol compound of a melamine derivative in concentrations of 2-18 (4-12)%. Condensates of unlimited water miscibility are most suitable.

Preferred ratios of components a : b are between 3: 1 and 6: 1.

The impregnating bath is prepared by mixing the aqueous solutions a and b and adjusting the pH to 8. Impregnating baths having a high content on dry substance proved to be stable for a long time, eg, between 4 hours to several days. A weight increase of the impregnated goods of not less than 6% is required for a satisfactory flameproofing effect. If the fabric is dried at 70° C, the finish is resistant to water and neither the hand nor the tensile strength are changed; the finish also is made wash-resistant by drying at 120-160° C.

Example: A condensate prepared by reacting pyrophosphoric acid and urea was cooled down, filtered and brought with ammonia to pH 8 (a). One mol melamine was reacted with 2-3 mols formaldehyde and dissolved in water (b). A cotton fabric was padded in an impregnating bath containing 36% (a) and 9% (b), dried at 70° C and heated for five minutes at 150° C. It did not afterflame nor afterglow following this treatment. Neither the hand nor the tensile strength of the finished fabric were affected.

Among the references cited by the Patent Office:

Brit Pat 638,434 (Am Cyanamid/1950): imparting flame resistance to cellulosic material by impregnating with aminotriazine pyrophosphates.

USPat 2,305,035 (Sylvania Ind Corp/1942): flameproofing with an alkanolamine-guanidine phosphate.

USPat 2,452,054 (Albi Mfg Co/1948) covers a fire-retardant composition containing, among others, phosphoric acid, formaldehyde and urea.

USPat 2,464,342 (Pollak and Fasal/1949): obtaining a waterproof and nonflammable finish by impregnating with ammonium pyrophosphate and a melamine—formaldehyde condensate [cf *Am Dyestuff Reptr* **38**, 468 (1949)].

CHEMICAL MODIFICATION OF NATURAL FIBERS*

EDMUND M BURAS, JR
Harris Research Laboratories, Inc
Washington 11, DC

One means of imparting specially desired properties to the natural fibers, thereby better adapting them to specific end uses, is through chemical modification of the fiber without change in the natural physical form. Recent research in the chemical modification of the natural fibers, wool and cotton, has provided a potentially important array of new fibers with enhanced properties. In general, the acceptance of these chemically modified fibers has been slow. Only a few are of sufficiently low cost and yield interesting enough changes in textile properties to have merited commercial interest. Some of those which seem to be more practical and commercially feasible are described in terms of the chemicals needed for their production and the new properties imparted. Facts on past and current usage, and estimates on potential usage ranging up to 25 million pounds per annum for some of these products, are given in the paper.

Reasons for the slow acceptance of these chemical modifications of wool and cotton are discussed. Principal among these are: 1) competition for the chemically modified fibers is not in the natural fibers, but in the synthetic fibers; 2) textile processors are primarily interested in lowering the cost-to-performance ratio of their products, not in promoting their fiber content; and 3) textile processors are neither organized nor capitalized to undertake the final stages of development of chemically modified natural fibers.

INTRODUCTION

MOST of the chemicals consumed by the textile industry of today are used in the manufacture of synthetic fibers, and in their further processing and finishing, and in the processing and finishing of the natural fibers. In the latter categories are chemicals used to scour, bleach, and dye, as well as those applied to make goods more resistant to burning, soiling, wrinkling, or to otherwise modify their properties according to the end-use requirements. These are represented, in general, by one or more substances added to the fiber and, equally generally, they may be removed almost as easily as they were applied.

There is, however, another means of imparting specially desired properties to the natural fibers. This is through chemical modification of the molecular composition of the fiber without major change in the natural physical form. The chemicals added in this type of treatment become an almost inseparable part of the fiber, or make permanent changes in it, and these new parts cannot be removed, or the changes undone, by leaching with water or solvents. This approach to processing, with one exception that shall be pointed out later, is not yet commercially widespread, but it offers such attractive possibilities when applied to wool and cotton that it should be included in any discussion of the possible future needs for chemicals by the textile industry.

The concept of chemical modification to improve textile properties has been advanced for over half a century. It might even be attributed to John Mercer (*18*) who, in 1844, treated cotton with caustic soda solution to increase its affinity for dyes and thereby make it more attractive commercially. Mercer did not permanently change the cotton's chemical composition, however; such a change was to be brought about first by Cross and Bevan in 1900 (*6*), but their researches were fundamental in nature, and efforts toward commercialization of their product, a partially acetylated cotton, were not made. In the years which have passed since then, quite a few chemical modifications of cotton and wool have been rather extensively investigated, many with a view toward commercialization, and it should now be possible to take a realistic view of their potentialities in the textile industry. Some of these changes can better adapt cotton and wool to the increasingly stringent requirements of the textile market, and it may be anticipated that chemically modified natural fibers will find increasing commercial acceptance.

CHEMICAL REACTIVITY OF WOOL AND COTTON———Most of the chemical modifications involve the hydroxyl groups of cotton cellulose, or the amino, carboxyl, amido, hydroxyl, and disulfide groups of the various amino acids which make up the polypeptide chains of wool. Examples of chemical reaction of cotton and wool with a great many reagents can be found in the literature (*8, 19, 28*), but only a few reagents are of sufficiently low cost and yield interesting enough modification of textile properties to have merited commercial interest. Those processes for the chemical modification of wool and cotton which seem to be the more practical and commercially feasible shall be examined in respect to the principal chemicals needed for their production.

ESTERIFYING AGENTS

ACETIC ANHYDRIDE ON COTTON———One of the first useful new fibers of chemically modified cotton was formed by the application of acetic anhydride and catalysts, which converts about one quarter of the hydroxyl groups of the cellulose to the acetate ester. Patented in 1926 (*23*), the product was first used for "effect threads" when woven into cloth along with untreated cotton or woolen threads, thereby creating certain kinds of patterns by virtue of a difference in dyeability. Further developments led to more rot-resistant products showing commercial utility in electrical insulation and in fabrics likely to come in contact with the ground or immersed in water (*25*), such as barricade and sand bags. Such products have been commercially available in Europe and England for about 20 years. During the past decade, a simpler and more rapid process developed at the Southern Utilization Research and Development Division of the United States Department of Agriculture, and based on the use of acetic anhydride along with perchloric acid catalyst, gives added acid resistance and outstanding heat endurance as well. The treated cotton, for example, retains its strength 6 to 12 times as long as untreated cotton under identical conditions of exposure to heat (*3*). Partially acetylated cottons of this type are manufactured in the United States by at least two companies. Their production has been rather small by textile standards, possibly in the order of 1,000,000 pounds per year, and this has been used in such specialized applications as household ironing board covers and fabrics used similarly in commercial laundries. Experimental evaluations as a rotproof fabric by the Engineer Research and Development Laboratories of the Army(*1*) and the Air Development Center of the Air Force (*13*) have been very encouraging, however, so that it is quite possible that this additional application may rise greatly in importance in the future. The National Cotton Council has esti-

*Presented at the "Symposium on the Textile Industry", Division of Chemical Marketing and Economics, 131st National Meeting of the American Chemical Society, Miami, Florida, April 7-12, 1957.

mated rot resistance to be a significant factor in the marketing of 500 million pounds of cotton per year under ordinary conditions (*16*). Partially acetylated cotton is too costly to fill this general need, however, in view of current estimates on the costs of chemicals and processing, which approximate 20 cents per pound of cotton treated if 2-year amortization of investiment is included (*9*). Development of this process is continuing, however, and it appears possible to obtain a product of the desired properties at about 14 cents per pound if the scale of production were to reach the 50 million pound per annum level. A middle-of-the-road estimate of 20 million pounds of cotton to be partially acetylated to fill selected civilian and military needs would require about 30 million pounds of acetic anhydride and about two-thirds million pounds of perchloric acid per year.

More recently, two further developments in the acetylation of cotton have appeared, these too being a result of pioneering efforts at the Department of Agriculture's Southern Utilization Research and Development Division in New Orleans. One involves the application of selected vat dyes to partially acetylated cotton to make it especially resistant to sunlight in outdoor weathering tests (*2*); the other involves nearly complete reaction of the cotton with acetic anhydride to form a triacetate having abrasion and tear-resistant properties superior to those found in synthetic solvent spun triacetate fibers (*4*). If these chemically modified cottons were to successfully enter the very large markets of outdoor fabrics and apparel goods for which they may be suited, the preceding estimate of 20 million pounds of cotton treated per year, would be much too small indeed.

ACETIC ANHYDRIDE ON WOOL ——The treatment of wool with acetic anhydride has also been reported frequently in the chemical literature, the principal desirable properties imparted being greatly reduced dye acceptance, and increased resistance to growth of mildew. The method of treatment is not unlike that employed on cotton, and the chemical consumption is in about the same ratio. Such acetylation, or "immunizing" of wool has not been widely practiced however, because the process is difficult to control, and some yellowing and harshening of the wool frequently occurs (*26*). Immunized wool is not in as great demand in the United States as in European countries, but if this demand should grow so that its production by acetylation is undertaken in this country, a starting figure might be set at about 1,500,000 pounds of acetic anhydride per annum to treat one million pounds of wool.

PHOSPHORIC AND SULFAMIC ACIDS ON COTTON AND WOOL ——Another esterification, the direct reaction of both cotton and wool with phosphoric or sulfamic acids has engaged limited commercial attention. During World War II, phosphoric acid-urea mixtures were used in the "Ban-flame" process on cotton, giving a complex mixture of cellulose phosphates which had good strength and flame resistance (*20, 21*). This process is no longer in commercial use, however.

Sulfamic acid has been suggested for the practical treatment of wool to give a product which has reduced acceptance for selected wool dyes (*15*). This could conceivably receive further commercial interest, paralleling (and possibly superceding) that of wool immunized by partial acetylation as previously mentioned, with possible United States consumption of sulfamic acid being in the order of 1,000,000 pounds per annum should its production be undertaken in this country. This could easily occur if a great interest in patterns and styles of goods requiring immunized wool should develop.

SULFONYLCHLORIDES ON COTTON——Prior to the advent of nylon and acetate fibers which do not accept most direct cotton dyes there was produced commercially a modest quantity of "immunized" cotton through its esterification with para-toluene-sulfonyl chloride. The product had little to offer except the dye resistant feature, and it quickly passed from the commercial scene. Very recently Pacsu and Schwenker (*7*) have found that the esterification of cotton with methane sulfonyl chloride gives a product which can be further reacted with halides in aqueous solution. Substitution with bromine and iodine give outstanding flame resistance. It is too early to evaluate this treatment from a cost standpoint, so that its commercial potential cannot be even approximated. There is tremendous interest in the flameproofing of cotton fabrics, both military and civilian, however, and the demand for the sulfonyl chlorides in flameproofing treatments of cotton might quickly leap to the level of 2 to 3 million pounds per annum should the necesssary stimulus be supplied.

ETHERIFYING AGENTS

ACRYLONITRILE ON COTTON ——Cotton can be reacted with acrylonitrile in the presence of water and caustic soda, the principal reactions being cyanoethylation of the cotton and conversion of additional acrylonitrile by hydrolysis to a byproduct. The textile product has considerable rot resistance, a degree of heat and acid resistance, and other changed properties such as dyeability (*5*). The improvement of heat and acid resistance is not as great as that imparted by partial acetylation, but changes in the other properties such as dyeability are somewhat more advantageous. The best products are obtained when the cotton has combined with about $\frac{1}{6}$ of its own weight of acrylonitrile (DS=0.5, 3.8% N by weight). Byproduct formation consumes additional acrylonitrile at least equal to half of the weight of the cotton, and however, pilot plant studies indicate other significant losses because of the relatively large quantities of reagent handled per unit of product. Total consumption of acrylonitrile consumed therefore would likely equal the weight of cotton treated. Because of this, and the relatively great cost of a treating plant (being about $300,000 exclusive of building for a plant capable of processing 1250 pounds of cotton per hour), cost figures (*5*) for this process are discouraging.

Just recently, another process for application of acrylonitrile to cotton has appeared (*17*). The newer process does not react acrylonitrile with the cotton itself, but rather catalyses its polymerization at selected sites on the cotton. Acrylonitrile is used in this process in a lower ratio than in the earlier process, being about 20 pounds per 100 pounds of cotton, and costs appear more nearly in line with the improvements. Hope is held for this new process as a weather-and-rot resistant finish for cotton in combination with a lead chromate treatment, which is known to provide significant weather resistance to cotton and is currently used as a treatment for extending the life of 5 millions of square yards of tobacco shade cloth per annum (*11*). Should it prove its worth in further tests, especially if it can endure rot and weather without the addition of the lead salts, this new acrylonitrile treated material may be in a good competitive position for outdoor uses. Polyacrylonitrile-treated cotton may ultimately hold a small part, say 5% or 25 million pounds of the current market for rot-resistant cotton goods

(*Continued on page 939*)

Proceedings of the
American Association of Textile Chemists and Colorists

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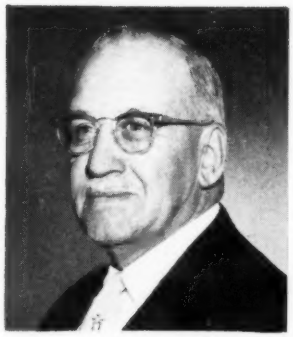
December 2, 1957

LINBERG REELECTED PRESIDENT
Incumbent Vice Presidents Also Reelected



GEORGE O LINBERG

GEORGE O LINBERG, Synthron, Inc, Ashton, RI, fourteenth president of the American Association of Textile Chemists and Colorists, has been reelected for the year 1958, according to a recent announcement from national headquarters in Lowell, Mass.

All four of the current vice presidents were returned to office for 1958, with the only contest occurring in the Southern Region, where H Gillespie Smith, American Cyanamid Co, won reelection by defeating Walter M Scott, U S Dept of Agriculture. The other vice presidents reelected are: Ernest R Kaswell, Fabric Research Laboratories, Inc, New England Region; Weldon G Helmus, Fair Lawn Finishing Co, Central Atlantic Region; and Elliott Morrill, The Best Foods Inc, Western Region.

On being told of his reelection as president, Mr. Linberg said: "I am greatly honored that the members of AATCC have expressed the wish that I continue in office. I shall take every opportunity to lead the Association into new areas of service to the textile industry and to the consuming public. AATCC is on the move, and I am proud to be part of this growing and dynamic organization."

1957 AATCC CONVENTION REVIEW . . .

A thorough editorial and pictorial review of the

36th NATIONAL CONVENTION

held Nov 14-16 at the Hotel Statler, Boston, Mass

will be featured in the next issue (Dec 16)

of

American Dyestuff Reporter

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

57-17

Education: textile engineering & chemistry, Hogere Textile School Tilburg; Business Administration School, Berlitz School of Languages.
Experience: approx 10 years dyer-finisher; laboratory; chemical sales; fibers and yarn sales (especially acrylic fibers); marketing; merchandising; sales promotion; trouble shooting.
Age: 38; married; references.
Position desired: sales; sales development of intermediaries: textile chemicals, dyestuffs, synthetic fibers and yarns (cotton, woolen, worsted, rayon, etc).
Location desired: South or Southeast. New York-New Jersey or California acceptable.

12-2; 12-16

57-18

Education: BS, textile engineering, Bradford Durfee College of Technology; Army specialized training courses, civil engineering, Norwich Univ & Univ of Massachusetts; business law, Boston Univ.
Experience: Approx 6 years sales (finishing) and apprentice dyer. Also supervisory experience.
Age: 30; single; references.
Position desired: technical sales.
Location: open.

11-18; 12-2

57-19

Education: certificate, textile chemistry and dyeing, Lowell Technological Institute; industrial supervision, Univ of New Hampshire.
Experience: 20 years wool and synthetics dyeing.
Age: 44; married; references.
Position desired: dyer or demonstrator.
Present occupation: overseer of dyeing.
Location desired: New England.

12-2; 12-16

57-20

Education: BS, chemical engineering, Univ of New Hampshire.
Experience: 8 years research chemist and laboratory director.
Age: 30; married; references.
Present occupation: laboratory director.
Position desired: plant or research chemist.
Location desired: New England.

12-2; 12-16

57-22

Education: BA, economics, Franklin & Marshall; textiles, Columbia Univ.
Experience: 9 years management trainee—dyer; 2 years technician—dyestuff manufacturer; 3 years assistant superintendent of dyeing; 1 year technical director—dye plant; 1 year manager—dye plant—Mexico.
Age: 42; married; references; veteran.
Position desired: Plant manager or assistant; plant superintendent or superintendent of dyeing.
Location desired: South or Latin America—any acceptable.

12-2; 12-16

57-23

Education: BTC (textile chemistry), Lowell Technological Institute.
Experience: 8 years plant chemist and trouble shooter in commission dyeing and finishing plants—rayons, nylon, modern synthetics; 1 year assistant manager; 1 year quality control engineer.
Age: 42; married; references.
Present occupation: quality control engineer.
Position desired: plant chemist, superintendent, assistant plant manager, or technical service.
Location desired: Metropolitan New York. New England acceptable.

12-2; 12-16

57-24

Education: BS, chemistry, Ursinus College.
Experience: 3 years textile consultant; 15 years superintendent dyeing and finishing; 10 years chemist and dyer.
Age: 49; married; references.
Position desired: superintendent dyeing and finishing, or dyer.
Location desired: open.

12-2; 12-16

AATCC Calendar

COUNCIL
Jan 24 (New York, NY); May 23 (Philadelphia, Pa); Sept 19, 1958 (Piedmont area)

NATIONAL CONVENTIONS
Oct 30-Nov 1, 1958 (Hotel Conrad Hilton, Chicago); Oct 8-10, 1959 (Sheraton Park and Shoreham Hotels, Washington, DC); Oct 6-8, 1960 (Sheraton Hotel, Philadelphia, Pa); September 28-30, 1961 (Buffalo, NY)

DELAWARE VALLEY SECTION
Dec 6 (Kugler's Restaurant, Philadelphia, Pa)

HUDSON-MOHAWK SECTION
Jan 24 (Albany, NY); Mar 28 (Johnstown, NY area); May 16 (Ladies Night); June 20 (Summer outing)

MID-WEST SECTION
Feb 15 (Hotel Bismarck, Chicago, Ill); April 19 (Netherland Hilton Hotel, Cincinnati, O); June 13-14 (Outing—Browns Lake Resort, Burlington, Wis)

NEW YORK SECTION
Dec 6 (Hotel Sheraton McAlpin, New York, NY); Feb 7 (New York, NY); April 11 (New Jersey area)

NIAGARA FRONTIER SECTION
Dec 6, Feb 21 (Buffalo); Apr 4 (Joint meeting)

NORTHERN NEW ENGLAND SECTION
Dec 6 (Annual meeting, Hotel Continental, Cambridge, Mass)

PIEDMONT SECTION
Jan 24-25 (Clemson House, Clemson, SC); Apr 11-12 (Washington Duke Hotel, Durham, NC); June 6-8 (Outing—Grove Park Inn, Asheville, NC); Sept 19-20 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION
Dec 5 (Annual Meeting—Johnson's Hummocks Grill, Providence, RI)

SOUTHEASTERN SECTION
Dec 7 (Atlanta Biltmore Hotel, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Dec 13 (Rapp's Restaurant, Shelton, Conn)

CONVENTION PROGRAMS WANTED

To complete its files, the Archives Committee is desirous of obtaining copies of the programs, banquet menus, etc, for the following National Conventions:

1927	1939	1942
1930	1940	1943
1937	1941	1945
1938		1948

Anyone who has any of these items available is requested to contact:

Dr Sidney M Edelstein, Chairman
Archives Committee, AATCC
Dexter Chemical Corp
819 Edgewater Road
New York 59, N Y

Piedmont Section———

FORMALDEHYDE EVOLUTION FROM TEXTILES*

OSBORNE C BACON, MEREDITH F PARKER, and LEON F HORN

Technical Laboratory
E I duPont de Nemours & Co, Inc
Wilmington, Del

INTRODUCTION

THE problem of odor caused by the gradual evolution of formaldehyde by many crease-resistant textiles has been recurrent since the introduction of urea-formaldehyde finishes about 1930. The problem is most acute during the storage of fabric or finished garments. Formaldehyde odor is frequently a problem to the cutters of fabrics. Since ventilation plays an important part in minimizing odors, it is very probable that the increased use of air conditioning has exaggerated the problem. The problem also becomes more acute as the production of these finishes increases, inasmuch as stores carry a greater proportion of resin-treated fabrics and garments.

According to Howard (*1*), the problem is also exaggerated when resin-finished fabrics are shipped to the garment maker, etc, without the benefit of scouring or washing.

It is the object of this paper to present methods for collecting formaldehyde given off by fabrics under different conditions of storage and for estimating the quantity of formaldehyde evolved.

The storage of large quantities of fabric under end-use conditions is not practical for test purposes, but simulation of these conditions on a laboratory scale is possible. However, the sense of smell cannot be depended upon to evaluate the odor problem. The nose quickly becomes insensitive to the odor of formaldehyde. Furthermore, the objectionable odor accumulated during storage of fabric or garments in bulk may be rapidly dissipated and missed in small-scale tests.

The classical methods for the estimation of formaldehyde are Denige's (*2*) modification of Schiff's fuchsin-bisulfite method run in the presence of strong acids, Eegrieve's (*3*) chromotropic acid method, Schryver's (*4*) phenylhydrazine-potassium ferricyanide method in strong HCl, the hydroxylamine-hydrochloride method, the method of peroxide oxidation to formic acid, the dimedone gravimetric method, the bisulfite method, and the cyanide silver nitrate method. At least three of these methods have been adapted for the determination of formaldehyde in resin-treated cotton fabrics. They are the Denige's method (*2*), the hydroxylamine method (*1*), and the dimedone method (*5*). By their nature, the first two of these adaptations are restricted to the formaldehyde extractable by water or a water-alcohol mixture. They account for only the free formaldehyde present at the time of testing and formaldehyde which may be developed by hydrolysis of the finish by the test medium. The dimedone method adaptation was used by Passler and Wannow (*5*) to measure the amount of formaldehyde given off by a fabric during a 4-hour exposure to a stream of nitrogen adjusted to various humidities at 40°C.

Osborne C Bacon

A quantitative method for determining the amount of formaldehyde given off by textiles under varying conditions of storage is developed. A sample of fabric is stored in a gas-tight container with water or an aqueous solution of glycerine, depending upon the relative humidity expected in storage. The formaldehyde evolved is collected in the water or glycerine solution by isothermal distillation and determined quantitatively by visual colorimetric or spectrophotometric methods. Rate of formaldehyde evolution curves for dimethylol ethylene urea are given. They show 1) A low ratio of free formaldehyde to dimethylolethylene urea is desirable to minimize formaldehyde evolution, 2) A neutralizing wash greatly reduces formaldehyde evolution, and 3) less formaldehyde is evolved with a $MgCl_2$ catalyst than with an amine hydrochloride catalyst under the same conditions of application.

EXPERIMENTAL

The development of a method for measuring the formaldehyde evolution from textiles posed two main problems. The first problem was how to collect the formaldehyde gas given off by a fabric under conditions of storage existing in practice. The second problem was how best to measure the amount of formaldehyde evolved. These problems have been resolved by the following procedures.

Storage conditions have been simulated in the laboratory by placing about 10 grams of fabric in a sealed pint Mason jar at a controlled temperature. An open vial containing a measured amount of water or glycerine solution is also placed in the jar to provide humidity and to act as the formaldehyde absorbent. The concentration of glycerine may be varied to provide the desired relative humidity. Glycerine was shown to be compatible with the analytical method employed for the estimation of formaldehyde. When the desired exposure time is complete, the vial is removed and capped awaiting analysis.

The work in this paper describes an adaptation of the phenyl hydrazine-potassium ferricyanide method of Schryver (*4*), as modified by Tannenbaum and Bricker (*6*) for the quantitative estimation of small amounts of formaldehyde. This method is sufficiently sensitive to determine formaldehyde in concentrations as low as one ppm in water or aqueous glycerine solutions. At present, it appears that a high degree of sensitivity is needed.

Several modifications of the chromotropic acid method of Eegrieves are under consideration. They appear to be as sensitive as the recommended method and may be preferred since chromotropic acid is not so toxic as phenylhydrazine and the color developed is more stable.

*Presented by Osborne C Bacon at the Hotel Barringer, Charlotte, NC before the Piedmont Section on September 28, 1957.

TEST METHOD

PRINCIPLE——Fabric containing a resin finish is exposed at controlled relative humidity for a period of time under constant temperature in a tightly sealed jar containing an open vial of formaldehyde absorbent. Upon removal, a temporary red color is developed from the absorbent solution by a time-sensitive reaction for CH_2O with phenylhydrazine, potassium fericyanide and sodium hydroxide. The concentration of formaldehyde is determined from the depth of color.

SCOPE——This method is applicable to the chemical determination of the amount of formaldehyde given off by fabrics for varying periods of time and under various conditions of temperature and relative humidity.

PROCEDURE——

Formaldehyde Absorbent

Use the following solutions of glycerine to approximate various relative humidities in the test jars:

Relative Humidity	*Parts by Weight* Water	Glycerine
100	100	0
65	32	68
50	20	80
35	10	90

Phenylhydrazine Hydrochloride Aqueous Solution

Dissolve 15.0 g of reagent in water at 70°C. Dilute to 200 ml at room temperature. Filter before use if turbidity develops. *HAZARD:* According to Sax (7) and Jacobs (8), phenylhydrazine and phenylhydrazine hydrochloride are *very toxic* when absorbed through the skin, digestive tract or respiratory tract. The symptoms are fatigue, headache, dizziness, urinary disturbances, casts, etc.

Potassium Ferricyanide Aqueous Solution

Prepare 5.0 g of reagent in 100 ml of solution. Filter if necessary. Although the solution turns darker on standing, it retains full potency.

Sampling

Test fabrics should be carefully sampled. The CH_2O liberated from the sample depends upon its past history. It may vary with storage time and storage conditions.

Place 10.0 grams of fabric sample in a dry pint Mason jar and insert a vial containing 5.0 ml of the desired absorbent. Allow full 20 seconds drainage time in pipetting the viscous glycerine solutions. Prop this vial with fabric so the liquid will not spill. Store the closed jar under the conditions desired for formaldehyde evolution. After the storage period, remove the vial and cover tightly until tested for formaldehyde.

TABLE I

PPM CH_2O	*Volume in ml of* Colored solution	*Diluent*
40	100	0
35	87.5	12.5
30	75	25
25	62.5	37.5
20	50	50
15	37.5	62.5
10	25	75
8	20	80
6	15	85
4	10	90
2	5	95
1	2.5	97.5

Phenylhydrazine Reaction (Wear rubber gloves, rubber apron, protective glasses and work in a hood).

Empty the vial containing the absorbed CH_2O into a 250 ml volumetric flask. Rinse into the flask with 4.0 ml of isopropyl alcohol, followed by one ml of water. While swirling, add 5.0 ml of phenylhydrazine hydrochloride solution to the flask from a burette. Allow the contents to stand 10 ± 1 minutes. The mixing and times of standing are important.

Then add 3.0 ml of potassium fericyanide solution from a burette and mix at once. Allow to stand 5 ± 0.5 minutes.

Add 20.0 ml of 10% sodium hydroxide solution from 25 ml graduate and mix at once. Allow to stand 4 ± 1 minutes.

Dilute the solution with distilled water to about 200 ml, mix without delay, and then dilute to 250 ml and again mix. Within 20 minutes determine the amount of CH_2O present by one of the three following methods.

NESSLER TUBE METHOD USING PHENYLHYDRAZINE - CH_2O STANDARDS——Colored solutions from the unknown absorbed formaldehyde samples and color standards prepared at the same time using known amounts of formaldehyde are compared in Nessler tubes. Table I gives the proportions for mixing the colored solution from the reaction of 5 cc of 40 ppm CH_2O and phenylhydrazine with a "blank" diluent to obtain colored standards representing lower concentrations of CH_2O.

Preparation of 40 ppm CH_2O Solution

Prepare a stock solution of 4000 ppm CH_2O (make up once a month) by measuring precisely 10 ml of 37% formaldehyde reagent with a bulb pipette, into a volumetric flask and dilute with water to one liter. Measure precisely 10 ml of this solution with a bulb pipette, into a volumetric flask and dilute with water to one liter to make a 40 ppm CH_2O solution.

Preparation of "Blank" Diluent

Following the procedure under "Phenylhydrazine Reaction" using 5 ml of water in place of the formaldehyde absorbent sample. This diluent is yellow and must be used instead of water to obtain the proper color standard.

Estimation of More than 40 ppm CH_2O

When the unkown color is between 40 and 80 ppm CH_2O, the colored reaction mixture may be diluted with "blank" diluent for comparison with the standards already described. With samples containing more than 80 ppm CH_2O the unknown aqueous samples should be diluted with water to less than 80 ppm. At higher concentrations of CH_2O, Beer's law is not valid.

NESSLER TUBE METHOD USING DYE COLOR STANDARDS——

Alkaline Buffer Solution

Dissolve 53 grams CP Na_2CO_3 (anhydrous) in about 500 ml of water. Elsewhere, dilute 10.0 ml of glacial acetic acid to about 250 ml, and pour this into the carbonate solution under agitation so that no CO_2 escapes due to localized strong acidity. Dilute to 1000 ml. This solution is about $\frac{M}{2}$ Na_2CO_3 and $\frac{M}{6}$ acetic acid.

Rosophenine 10B (Old CI 225; New CI 14780) Stock Solution #1

Dissolve 0.366 grams of dye in 400 ml water at 160°-170°F in a casserole. When solution is complete, add 25 ml of alkaline buffer solution, cool and dilute to 500 ml. This solution loses about 1% in strength per month when stored in a glass-stoppered bottle in diffused light.

Rosophenine 10B Stock Solution #2

Pipette exactly 25 ml of concentrated stock solution #1 into a 500-ml volumetric flask containing 25 ml of alkaline buffer solution. Dilute to the mark with water. This solution loses strength at the rate of about 1% per day in diffused daylight. Store in a brown glass bottle.

Methyl Orange Stock Solution #1

Dissolve exactly 0.360 g of dye in 400 ml of hot water containing 3.0 g NaOH (AR grade). Pour into a 500-ml volumetric flask, and when cool

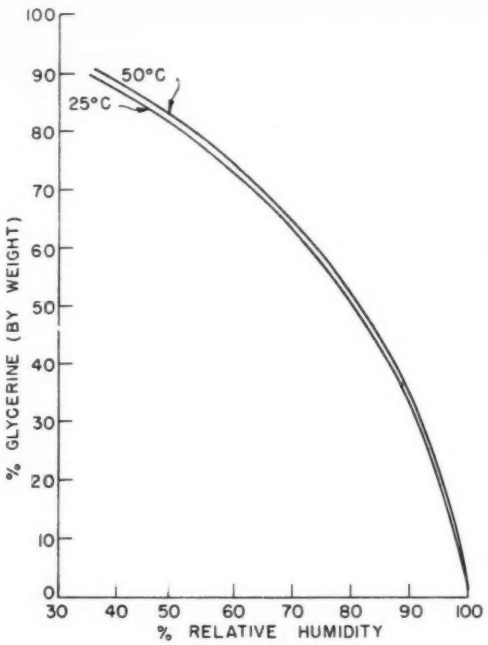


Figure 1
Relative humidity and glycerine strength

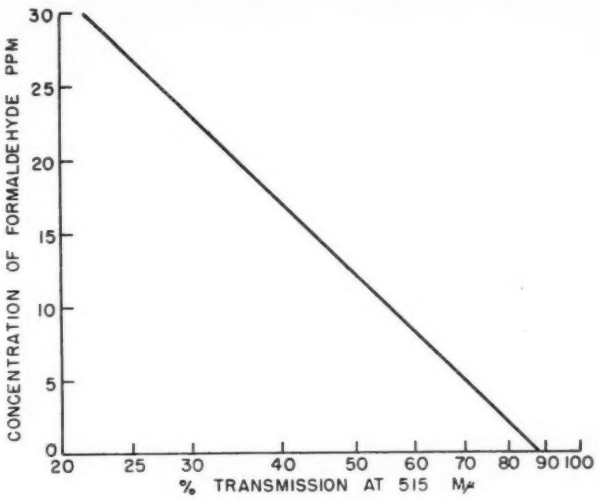


Figure 2
Parts per million of formaldehyde from percent light transmission of colored solution

dilute to the mark and mix. Store in a glass stoppered bottle in diffused light.

Methyl Orange Stock Solution #2

Pipette exactly 50 ml of concentrated stock Solution #1 into a 500-ml volumetric flask. Dilute to the mark with water and mix. This solution loses strength at the rate of about 1% per month. Store in a glass-stoppered bottle in diffused light.

The color standards shown in Table II lose about 1% strength per day in diffused daylight.

PERCENT TRANSMISSION METHOD———When a spectrophotometer or similar instrument is available, it is possible to obtain ppm of CH_2O from a curve based on percent light transmission at 515 millimicrons wavelength. This relationship is given in Figure 2.

TABLE II
Color Standards—Preparation of 100 Ml

Color Standard in ppm CH_2O	Milliliters of #2 Stock Solutions and buffer Required		
	Red dye	Yellow dye	Buffer
1	2	5	5
2	4	5	5
6	12	5	4
10	20	5	4
20	40	5	3
30	60	5	2
40	80	5	0

RESULTS

CALCULATION OF RESULTS———The ppm of CH_2O in the absorbent solution must be translated into ppm on the weight of the fabric sample. The following formula for doing this takes into account the decreased volume of absorbent solution caused by evaporation. It is assumed that the water lost by evaporation contains the same concentration of CH_2O as the residual water. Most of the evaporated water is condensed on the walls of the Mason jar. Part of the evaporated water is undoubtedly adsorbed on the fabric. About 0.8 gram of water could be adsorbed by 10 grams of oven-dry fabric at 65% relative humidity. Experience has shown that at 40°C and 100% relative humidity in the jar less than one ml of absorbent is evaporated in 3 days. Preliminary tests have indicated that glycerine does not affect the distribution of formaldehyde between the open vial and the sealed jar containing it. Even if the distribution is different the test is valid for comparisons using the same amount of glycerine.

Calculation of results is made by means of the following formula:

$$\frac{5}{\text{Residual ml in vial}} \times \frac{5\ (\text{ppm } CH_2O \text{ in absorbent solution})\ (\text{dilution})}{\text{grams of fabric}} = \text{ppm } CH_2O \text{ on weight of fabric}$$

The dilution factor is applied either when the absorbent solution has been extended before the phenylhydrazine reaction or when the 250 ml of colored reaction mixture is diluted with "blank" diluent.

INTERPRETATION OF RESULTS———The phenylhydrazine method is very precise for the determination of formaldehyde; however, exact values are not obtained since there is a formaldehyde equilibrium between fabric, the atmosphere of the jar, and the absorbent.

It may be assumed that the amount of formaldehyde evolved is a measure of the potential odor. However, odor problems depend on other factors, such as conditions of storage. For example, storage in a closed space, like an air-conditioned room, is worse than in a well-ventilated place. Obviously, the origin of the fabric sample is very important. It may be taken at any stage subsequent to curing or the neutralizing wash. The age of the sample and conditions of storage are important.

SOME FORMALDEHYDE EVOLUTION MEASUREMENTS

The rate of formaldehyde evolution from cotton fabric treated with dimethylol ethylene urea was studied as a typical mill problem.

Treatments were made on cotton under one condition of application.

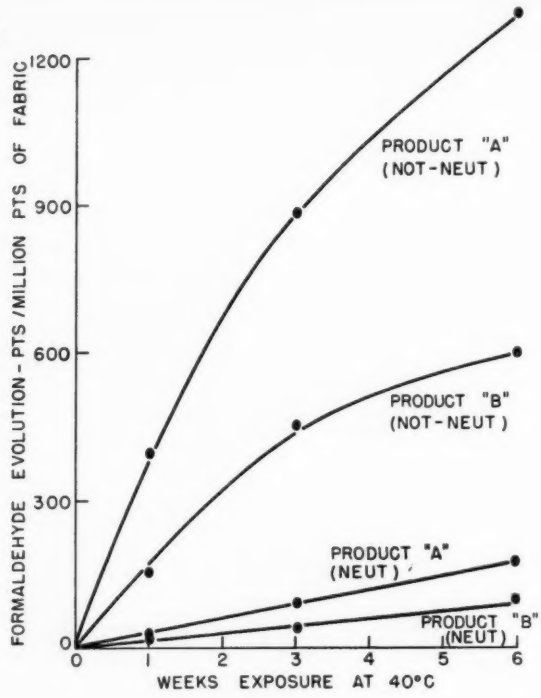


Figure 3
Amine HCl catalyst

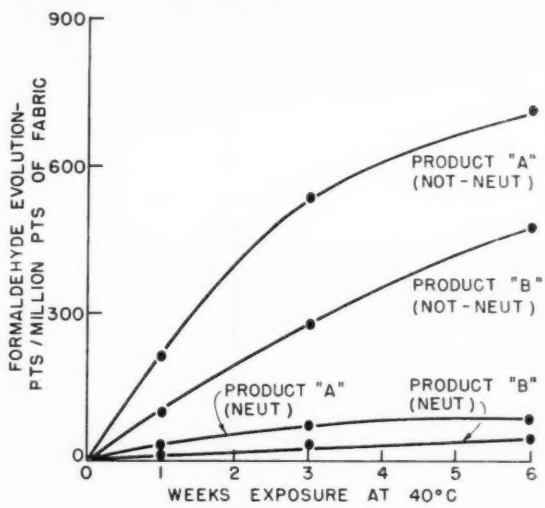


Figure 4
$MgCl_2 \cdot 6H_2O$ catalyst

Two commercial brands, A and B, of dimethylol ethylene urea were evaluated. Brand A contained 4% free formaldehyde based on the weight of the dimethylol ethylene urea and Brand B contained 0.8%.

The two products were applied under identical conditions using the same bleached 80 x 80 cotton sheeting. Each product was applied with two catalysts: an amine hydrochloride type containing 10% free amine and a metallic salt type. The concentration of dimethylolethylene urea applied by a padding operation was 4% on the weight of the fabric. Application baths contained 0.6% of the anhydrous magnesium chloride and 0.4% of the amine hydrochloride. All percentages hold for either the concentration of the bath or the weight of the fabric, since the bath pickup by the fabric was 100% by weight. The impregnated fabrics were simultaneously dried and cured for 3.5 minutes in a hot-air oven heated to 325°F. Some of the fabrics were washed (neutralized) and others not washed after treatment prior to testing for CH_2O evolution. The neutralizing wash consisted of agitation in a beaker containing 0.05% Duponol D Paste and 0.1% soda ash at 105°F for 3 minutes followed by rinsing.

Test conditions were selected to simulate practical conditions most likely to give trouble with formaldehyde odors. The unwashed treatments also present a greater problem than fabrics which are washed in the mill after curing. The test specimens were evaluated at an elevated temperature 104°F (40°C) and at a high relative humidity. The humidity of 90% to 100% was provided by the water placed in the test jar to absorb the formaldehyde.

The test results are given in graphical form in Figures 3 and 4. The evolution times in weeks are plotted as abscissas and the formaldehyde evolutions as ordinates. The experimental points lie very close to the curves, indicating good precision for the chemical evaluation of the formaldehyde and uniform rates of evolution. The reproducibility of results from repeated applications of finishes is not apparent from these results with single treatments. The reproducibility of treatments is not an objective of this work.

The results given in Figures 3 and 4 show the following:

1) A low ratio of free formaldehyde to DMEU in the product applied is desirable to minimize formaldehyde evolution.

2) A neutralizing wash greatly reduces formaldehyde evolution.

3) Less formaldehyde is evolved with $MgCl_2$ than with the amine hydrochloride catalyst.

SUMMARY

A method for collecting the formaldehyde evolved from a sample of fabric during storage or end use and a test procedure for quantitatively measuring the formaldehyde evolved have been developed.

The fabric is placed in a sealed jar with water or a water solution of glycerine for any desired period of time at any controlled temperature. Formaldehyde evolved from the fabric is absorbed by the water. The amount of glycerine used determines the relative humidity in the jar. A graph showing the relationship between concentration of glycerine and the resulting humidity is given.

A quantitative colorimetric method for determining small amounts of formaldehyde is described. Alternative methods for determining the amount of formaldehyde from the depth of color photometrically or by visual comparison with known standards are given.

Formaldehyde evolution measurements for DMEU finishes covering six weeks storage at 40°C and 90% to 100% relative humidity are presented.

REFERENCES

(1) Howard, J H, *Am Dyestuff Reptr* **45**, P53 (1956).
(2) Deniges, G, *Compt rend* **150**, 529 (1910).
(3) Eegrieve, E, *Z Anal Chem* **110**, 22 (1937).
(4) Schryver, S B, *Proc Roy Soc London* (B) **82**, 226 (1910).
(5) Paessler, W, and Wannow, H A, *Textilber* **35**, 1134-37 (1954).
(6) Tannenbaum, M, and Bricker, C E, *Anal Chem* **23**, 354-57 (1951).
(7) Sax, I, "Handbook of Dangerous Materials," Reinhold Publishing Co, New York (1951).
(8) Jacobs, M B, "The Analytical Chemistry of Industrial Poisons, Hazards, and Solvents," Interscience Publishers, New York (1949).

1957 OUTING • SOUTHEASTERN SECTION

June 7-9

Radium Springs, Ga

(Additional photos on following page)

Doris Turner, Nell and Jack Roddy, Dwight Turner

R W "Bubba" Freeze, Gordon Wallace, Bill Clement

Joe Federal, Tom Davis, Mary Federal, Riley Jones, Ed Williams

Ted Burgess, Joe Oliver, Donald Barnes, Nelson Harte

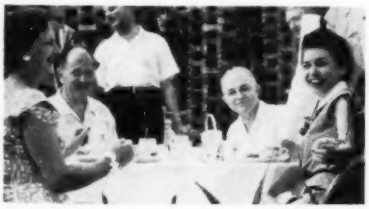
Bill Pearson, Ken Makant, Howard McCall, Bill McGhee

The George Jackmans, Gillie Smith, The Roscoe Whitneys

George Caron, Ted Burgess, Boyce Estes, Elwood Barbre, Barney Hansen

Ed Manning, Howard McCamy, Gordon Kenyon, Lou Kirby

Ed Manning, Bob Price, Joe Federal, Riley Jones



The Tom Davis', The Bob Lindseys

Jim Hall, Bob Horney, Cliff Smith, Bud Goldston

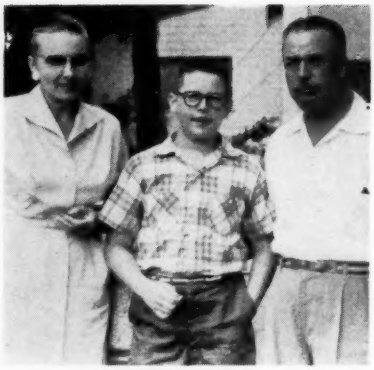
The Marvin Pollards, The Joe Linbergs

The Jim Buckners, The Francis Minnicks, The Bud Goldstons

Bob Hallowell, Carol Hallowell, George Jackman, Roger Dickinson, Marge Hallowell

Russ Gill, Jim Swiney

Claude Suttle, Ken Makant, Bill Pearson



The Bill Slaughters

The George Carons

The Bill Amos'

Gwen Wallace, Sam Hayes

The Bill Kennadys

The Booker Tatums

The Roger Dickinsons

The Kemp Haynes'

The George Spicers

The Avery Garrisons

Buddy Harmon, Elwood Barbre, Neb Johnston, Frank Nerney

Bill Kennady, Royce Smith

Chemical Modification of Natural Fibers—

(*Continued from page 930*)

(*16*). This level of production would require 5 million pounds per annum of acrylonitrile.

CHLOROACETIC ACID ON COTTON———Through the application of sodium hydroxide and monochloracetic acid on cotton, apparently in any sequence, a product that swells greatly in water, or even dissolves, can be made. The reaction is principally that of formation of the ether, carboxymethylcellulose. This chemically modified cotton has been suggested (*22*) as a substitute for soluble alginate fibers, which are produced from seaweed and used to a limited extent in scaffolding and weaving of unusually lofted and open woolens, being dissolved away after they have served their purpose in the weaving operation. Commercial scale methods for carboxymethlation of raw stock and fine yarns do not seem to have been perfected, but there is one commercially available soluble cotton fabric which has similar properties (*27*). This is prepared by the oxidation and hydrolysis of partially cyanoethylated cotton, using periodic or chromic acids. The strength of this fabric is reported to be good (*22*), but there is only a very limited demand for this material and its production does not consume significant quantities of the chemicals used.

AMINOETHYLSULFURIC ACID ON COTTON———Guthrie (*12*) and his coworkers at the Southern Regional Laboratory have reported on "aminized" cotton, made by reaction of aminoethylsulfuric acid with cotton. This reaction is also one of etherification, yielding the aminoethyl ether of cellulose. The product can be made with sufficient degree of substitution to have considerable ion exchange capacity, and presents an interesting innovation in the use of fabrics. In the form of a continuous belt, passing alternately through two baths, it can be used for an ion-exchange medium in the continuous purification of pharmaceuticals. Demand for such a specialty item can be expected to remain relatively limited, and the quantity of aminoethylsulfuric acid required for its production is not likely to present any problems to the chemical industry.

OTHER REAGENTS

FORMALDEHYDE ON COTTON———Formaldehyde alone, as a treatment for cotton, has not been a commercial success, though various developments have been suggested (*10*). In combination with urea, substituted ureas, and melamine, however, it is the foundation of most all commercially accepted treatments to produce "minimum care" and "wash and wear" fabrics. The principal reaction involves the linking of resin polymers to the cellulose; while this is true chemical modification, it is now so common that it is frequently included in the discussion of ordinary additive or non-reactive chemical finishes. Accepting such classification, the resin finishes will not be discussed further in this paper.

FORMALDEHYDE ON WOOL———Very mild applications of dilute formaldehyde solutions confer a significant degree of alkali-resistance to wool, presumably by cross-linking. These new linkages, supplementing the weaker cystine linkages, protect the modified wool fiber from damage from prolonged boiling in water, from exposure to alkaline solutions of reducing agents, and from moth and bacterial attack. This process is easily controlled, and relatively low in cost; however, it is not being used to any great extent.

CHLORINATION OF WOOL——— The production of shrink-resistant wool, stable to the mechanical action of laundering, has long been an attractive goal for research in the chemical modification of wool. The application of chlorine to eliminate the felting action of wool offers a solution of the problem. It is the differential frictional effects between the root-to-tip and the tip-to-root directions of the normally scaley wool fiber, combined with fiber resiliency, which cause wool fibers in contact to travel mutually toward each others' root end when rubbed together. Chlorination, either directly with the gas, or in alkaline solutions containing about 5% free chlorine, increases both the with-scale and anti-scale friction coefficients, with slight effect on the resilience, to minimize the felting tendency. Very recently, the status of shrinkproofing of wool was reviewed (*24*) with the general conclusion being reached that these commercial processes are adequate and the American market is probably ready for shrink-resistant wool, with the principal obstacle to its widespread adoption being a lack of promotion. The Wool Bureau has estimated the potential market for all wool washable fabrics to be 140 million pounds, in contrast with an estimate of only 10 million pounds actually treated for shrink resistance in 1956. While there are competitive treatments, full exploitation of this market might easily lead to the chlorination of 20 to 50 million pounds of wool per year, with consumption of perhaps one to 2½ million pounds of chlorine either directly as the gas or as the hypochlorite. The current consumption remains very small, however.

ALKYL DIHALIDES ON WOOL———One of the potentially important chemical modifications of wool depends upon reaction of the disulfide cross-links of the cystine component of wool. These crosslinks are necessary to the excellent properties of wool, but they are also weak points in that they are very sensitive to chemical attack. They can be replaced by more stable ones by chemical reduction and subsequent alkylation with dihalides, such as ethylene dibromide. Continued developments have led to a one-step procedure involving the simultaneous application of simple inorganic reducing agents and the dihalide cross-linking agent (*14*). The modified wool produced in this manner retains its desirable physical properties, being largely undamaged in handle, wet and dry fiber strength, and elasticity; outstandingly, its resistance to attack by alkalies is greatly enhanced.

This treatment can be applied to used wool, too, from which dyestuffs are easily removed by virtue of the reducing agent which is present. This simultaneous action of removal of dyes, or "stripping," together with fortification of the wool to better withstand further processing, led to the use of this process on millions of pounds of used wool when the price of new wool was much higher than it is today. In the current period of relatively stable wool prices, it is not being used to any great extent.

The reducing agents which may be used in this process are sodium hydrosulfite ($Na_2S_2O_4$), sodium sulfoxylate formaldehyde ($NaHSO_2 \cdot CH_2O \cdot 2H_2O$) and zinc sulfoxylate formaldehyde, $Zn(HSO_2CH_2O)_2$, all of which are commercially available. Along with the ethylene dibromide. they are consumed in the proportion of about 5 to 10% of the weight of wool treated.

INDUSTRIAL ACCEPTANCE

Confronted with the f egoing array of feasible chemical odifications which use chemicals of relatively low cost and good availability to impart highly desirable improvements to the natural fibers, cotton and wool, one may ask why the American textile industry has not yet undertaken any of these modifications on a larger

scale. The reasons for such slow acceptance can be stated rather broadly: 1) competition for the chemically modified fibers is not in the natural fibers, but in the synthetic fibers; 2) textile processors are primarily interested in lowering the cost-to-performance ratio of their products, not in promoting their fiber content; and 3) textile processors are neither organized nor capitalized to undertake the final stages of development of chemically modified natural fibers.

The importance of the first reason —competition of the synthetics— must not be understimated. While it is true that most textile properties of the natural fibers *can* be enhanced in almost any desired direction by one form of chemical modification or another, whole families of synthetic fibers, with excellent properties for almost every selected use are already available on a large scale. For a modified natural fiber to attract interest, it must not merely be "as good as"—it must be far better than the fiber it seeks to displace.

The second reason for slow acceptance is that the textile industry no longer has any particular loyalty to any one fiber or group of fibers. There is no basic interest among processors to undertake a development which is primarily directed toward the replacement of one fiber by another at the same level of performance-to-cost ratio. *Any* fiber that offers new or improved properties will receive interest by companies which produce lines of products needing those properties, but that interest will be only in proportion to the possibility of improving the performance-to-cost ratio of the product. The first specific problem in the evaluation of a new chemically modified natural fiber, then, is the dual one of determination of performance and cost. These are not, however, easily evaluated. As to performance, use tests too frequently belie laboratory tests, and the least looked-for factors often affect service life or consumer acceptance to an astounding degree. To evaluate performance one cannot rely on less than very large scale service testing. Production costs, too, are surprisingly difficult to evaluate when a product is to be processed by methods which are widely divergent from those traditionally employed, not only as to machinery and chemicals, but as to sequence in the established "assembly lines" of textile finishing. Frequently, the entire economy of a process may depend on a factor entirely strange to the textile industry, such as the marketability of a by-product or the recovery of a costly solvent.

The third reason for delayed acceptance of chemically modified natural fibers lies in the approach of the textile processing industry to the final phases of development of a new fiber. A very costly interplay between evaluation, laboratory research, and pilot scale modifications, appears to be needed to cope with the problems of introducing a new fiber. Thus, when a new modified fiber is further treated to overcome a newly-found shortcoming, or a lower level of modification is tried aiming at lower costs, the products must be re-evaluated, and the program becomes a shifting one from research laboratory to service evaluation to pilot plant modification to mill trail and back again. Clearly, such a program can be undertaken only by a vertically integrated corporation with a considerable budget for development. Suitable organizations which exist within the textile industry are not natural-fiber centered.

Related to this complexity is the matter of selecting an optimum relationship of properties to find the widest market. No single fiber, natural or synthetic, possesses all the desirable properties in the optimum relationship for all markets. Hence, fiber interests are constantly seeking ways to better their relative position in end-use applications. The responsibility of modifying and improving the synthetic fibers has been assumed by their manufacturers and they have found that they must work hand-in-hand with the fiber processor in developing new products. In constrast, the vested interests in cotton and wool are the farmers and ranchers who are practically out of touch with the processors. Instead, the fiber processor alone is being asked to assume the risk of the new venture of chemical modification of these fibers, and he is not prepared to do this.

The other vested interest in the chemical modification of cotton and wool is the chemical industry itself. In the past few years, some chemical manufacturers have begun to show awakening interest in the natural fibers, but this has been far too limited to show any major effects so far. However, industrial activity, both chemical and textile, in the field of chemical modification of cotton and wool, is steadily growing and there is an undercurrent of conviction that ultimate increased consumption of many basic chemicals for these purposes will be considerable. The writer, too, shares that conviction.

LITERATURE CITED

(1) Ashcroft, J M, and Bagdon, V J, *Am Dyestuff Reptr* **45**, 541-542, 579 (1956).
(2) Berard, W N, Gremillion, S G, and Goldthwait, C F, *Textile Research J* **26**, 81-86 (1956).
(3) Buras, E M, Cooper, A S, Keating, E J, and Goldthwait, C F, *Am Dyestuff Reptr* **43**, 203-208 (1954).
(4) Buras, E M, Hobart, S R, Hamalainen, C, and Cooper, A S, *Textile Research J* **27**, 214-222 (1957).
(5) Compton, J, "Cyanoethylation of Cotton", *Report*, Institute of Textile Technology, Charlottesville, Va (1956).
(6) Cross, C F, and Bevan, E J, "Researches on Cellulose 1895-1900," London, Longmans (1901).
(7) Pacsu, E and Schwenker, R F, *Textile Research J* **27**, 173-175 (1957).
(8) Fisher, C H, "Concept of Chemical Finishing," p 6-11, *Proc First Cotton Chemical Finishing Conference*, National Cotton Council of America, Washington, D C (1952); *Textile Research J* **25**, 1-11 (1955).
(9) Gardner, H K, Buras, E M, Decossas, K M, Cooper, A S, and Keating, E J, "PA Cotton: Preliminary Cost Studies." In review.
(10) Goldthwait, C F, *Textile Research J* **21**, 55-62 (1951).
(11) Goheen, G E, and DuPre, A M, *Chem Eng Progress* **52**, 111-114M (1956).
(12) Guthrie, J D, *Ind Eng Chem* **44**, 2187 (1952).
(13) Hamilton, E L, *WADC Technical Report 55-508*, Office of Technical Services, U S Dept of Commerce, Washington, DC (February, 1956).
(14) Harris, M and Brown, A E, *Ind Eng Chem* **40**, 316-322 (1948).
(15) Helfenberger, H, and Hagenbuch, W, (to Sandoz A G), U S Patent 2,726,133 (December 6, 1955).
(16) Horne, L K, *Hearings before Special Subcommittee on Cotton*, U S Congress House of Representatives, First Session, July 7-8, 1947.
(17) Kalina, J F, *Chemical Week* **80**, 112-116 (1957).
(18) Marsh, J T, "Mercerising," Chapman & Hall Ltd, London (1941).
(19) Olcott, H S, and Fraenkel-Conrat, H, *Chem Rev* **41**, 151-197 (1947).
(20) Reid, J D, and Mazzeno, L W, *Ind Eng Chem* **41**, 2828-2831 (1949).
(21) Reid, J D, Mazzeno, L W, and Buras, E M, *ibid* **41**, 2831-2834 (1949).
(22) Reid, J D, and Reinhardt, R M, *Textile Research J* **27**, 59-66 (1957).
(23) Rheiner, A *Angew Chem* **46**, 675-81 (1933); U S Patents 1,861,320 (May 31, 1932), 1,926,498 (September 12, 1933), 1,958,315 (May 8, 1934); German Patents 525,084 (November 14, 1926), 530,395 (February 20, 1929).
(24) Sookne, A M, "An Appraisal of Shrink-Resistant Treatments for Wool," *Textile Research J* **27**, 652-61 (1957).
(25) Thaysen, A C, Bunder, H J, Butlin, K R, and Williams, L H, *Ann Applied Biol* **26**, 178 (1939). British Patents (Thaysen only) 399,952 (October 18, 1933), 411,930 June 21, 1934), 486,901 (June 13, 1938).
(26) Waddington R H, *Thesis*, University of Leeds 1952).
(27) Weisberg, H (to Londat Aetz Fabric Co), U S Patent 2,724,632 (Nov 22, 1955).
(28) Zahn, H, and Wilhelm, H, *Textile Research J* **23**, 604,613 (1953).

General Calendar

AMERICAN OIL CHEMISTS SOCIETY
Apr 21-23, 1958 (Memphis); Oct 20-22, 1958 (Chicago); Spring, 1959 (New Orleans); Fall, 1959 (Los Angeles)

AMERICAN SOCIETY FOR QUALITY CONTROL—TEXTILE DIVISION
8th Annual Conference—Jan 30-Feb 1, Clemson House, Clemson, SC

AMERICAN SOCIETY FOR TESTING MATERIALS (COMMITTEE D-13)
Mar 18-21 (Spring Meeting, Sheraton Park Hotel, Washington, DC)

THE DRYSALTERS CLUB OF NEW ENGLAND
Jan 20, May 2 (Hotel Vendome, Boston, Mass); June 20 (Outing—Wachusett Country Club, West Boylston, Mass)

THE FIBER SOCIETY
April 30—May 1 (The Clemson House, Clemson, SC)

News of the Trade

11th National Home Laundry Conference

Hundreds of "mother's helpers" met in Washington, D C, at the Mayflower Hotel, November 1 and 2, for the Eleventh National Home Laundry Conference, to discuss new techniques and ways to simplify the modern homemaker's laundry tasks.

The Conference, sponsored by the American Home Laundry Manufacturers' Association, had as its theme, "Wash and Wear—Fact or Fantasy!", a survey of modern home laundering combined with a presentation of trends in textiles, equipment and techniques which will be used in homes within the next few years.

Topics included basic fiber characteristics affecting home laundering, fabrics for home laundering, construction of home launderable garments, sewing for home launderability, buying well-constructed garments for home launderability, home laundry appliances, home laundry chemistry, improving home laundry techniques, and teaching home laundering. The program also included a section on features, designs, chemicals and finishes that may be a part of future home laundries.

Among the Conference program speakers was George Wham, Good Housekeeping Institute, New York, who served as chairman of a panel of textile industry experts which discussed "Fibers and Fabrics for Home Laundry". New trends, processes and the relationship of various fabric knits, weaves, dyes and colors to launder-ability were considered, as well as the effect on fabrics of soaps, detergents and temperatures.

Home laundry appliances industry members reviewed the basic principles of washers, dryers and ironers; discussed improved home laundering techniques, including the proper handling of wash and wear and all other clothing and home launderable textiles; and presented the latest developments in proper water temperature and softness, detergents, bleaches, brighteners, bluings, fabric softeners and starches.

Another Conference highlight was a style show, "Travelogue of Fashion." Garments shown ranged from sport and resort wear to high fashion evening gowns. Every style in the show was completely machine washable, dryable and ironable. Textile chemical manufacturers coperated with AHLMA in producing the style show.

Clemson Announces Increase in Textile School Freshmen

A significant increase in textile school freshmen at Clemson College this fall has reversed the downward trend in textile enrollment there.

Gaston Gage, acting dean of the School of Textiles, has announced a total of 94 new students in the School of Textiles, representing 9.1 percent of total freshmen entering Clemson. Last year the school had 79 new students, only 7.7 percent of the entering freshmen. The breakdown shows 10 in textile chemistry, 38 in textile manufacturing and 46 in textile engineering.

USDA Contracts With Clemson for Further Textile Research

A new research program to study the effects of various synthetic-resin and rubber-latex emulsions upon cotton was announced recently by the U S Department of Agriculture. A contract for this research has been negotiated between the Department's Agricultural Research Service and the Clemson Agricultural College School of Textiles at Clemson, S C, where the work will be done.

The contract was negotiated for the Department through its Southern Utilization Research and Development Division at New Orleans, La, as part of a continuing program to develop new uses for cotton and to make cotton fabrics more suitable for present uses.

Many resinous and rubber-latex compounds are now commercially available. Although some of them are already being used to treat cotton, their full possibilities have not yet been explored. In the Clemson study, selected compounds will be used to learn if they will impart desirable new qualities to cotton.

Preliminary analysis shows that some of these compounds can improve cotton's resistance to water, abrasion, weathering, and soiling. Tenting, tarpaulins, and rainwear and other cotton clothing may benefit from such improvement.

James H Langston, professor of textile chemistry and dyeing at Clemson, and Carl Hamalainen of the Cotton Chemical Section at USDA's New Orleans laboratory will direct the research.

New Celanese Unit in Construction

Celanese Corporation of America has started construction of a new manufacturing unit at its Belvidere, N J, plant to increase its production of polyvinyl acetate emulsions, now manufactured at its Linden, N J, plant.

Production of these emulsions is a new activity for the Belvidere plant, which turns out cellulose acetate and cellulose propionate molding powders and cellulose acetate extruded and cast film.

New Interchemical Movie on Color

Interchemical Corporation's second motion picture on the subject of color, "Color Magic", has been released this fall for showings to industry, college and artist design groups throughout the country.

The new 22-minute sound movie illustrates some of the more important principles involved in using color in industry, in design and in the home. The film was produced under the technical direction of Interchemical's color experts F L Wurzburg and O C Holland and was made by Wilding Picture Productions.

Filmed in Eastman Color, "Color Magic" is based on the color lectures of Mr Holland to hundreds of graphic arts, advertising and designing audiences throughout the country. It is a companion movie to "This Is Color", Interchemical's motion picture treating the physics of color which was released last year.

"Color Magic" takes its audience into the studio of a color consultant. Through a series of demonstrations, the consultant unravels the mysteries of lighting, visibility, color associations and the illusions of size created by advancing and receding colors. Because the principles involved in "Color Magic" are presented in a nontechnical manner, the movie has a broad appeal to all individuals interested in color.

Arrangements for borrowing this 16mm film may be made through Interchemical representatives, or through the headquarters of Interchemical Corp, 67 West 44th Street, New York 36, N Y.

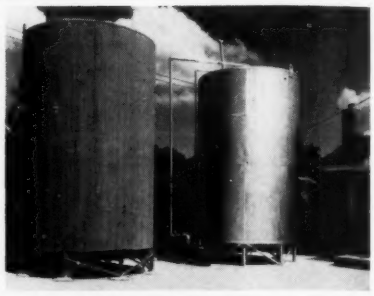
Metro-Atlantic Expands in SC

Metro-Atlantic, Inc has announced the completion of its building program in Greenville, S C.

A new manufacturing plant has been built and new boiler and reaction kettle installed, which will enable many products to be manufactured in the South that had formerly been manufactured at the Rhode Island plant.

New control, analytical, application and service laboratories have also been built and additional laboratory assistants employed, further augmenting Metro-Atlantic's technical service to Southern customers.

In line with the expansion program, new loading and unloading facilities have been installed along with large storage tanks. Additional trucks have also been placed in service.



FIT Scholarships

The Fashion Institute of Technology, New York, N Y, has announced the following honor scholarships for the year 1958-1959: Morris W Haft; Lord & Taylor; Maiden Form Brassiere Co; Maxwell Textile Co; Suzy Perette; Standard Romper Co; United Popular Dress Manufacturers. *These honor scholarships are full tuition grants awarded for aptitude and attainment.*

General scholarships are also available at FIT. These are full or partial tuition grants based on scholastic attainment, aptitude and financial need. General scholarships represent contributions of individuals, companies, associations and unions through the Educational Foundation for the Apparel Industry.

FIT is a two-year community college under the program of the State University of New York and awards the Associate in Applied Science degree. Liberal Arts and technical courses are included in all its curricula. The college is accredited by the Middle States Association of Colleges and Secondary Schools. Applicants for the above scholarships should address their inquiries to the director of admissions, Fashion Institute of Technology, 225 West 24 Street, New York 11, N Y.

1st S-W Regional Technical Seminar

In sessions held in October at the Hotel Henry Grady in Atlanta, Ga, Stowe-Woodward, Inc, Newton Upper Falls, Mass, manufacturers of rubber- and plastic-covered rolls, held its first of a current series of regional technical seminars.

This seminar was directed specifically to the problems of Southern textile mills served by Stowe-Woodward's Griffin (Ga) Division.

The sales engineer presented his individual textile mill problems to the group of experts that included Ralph Leighton, technical service head; Warren Stubblebine, director of research and development; David T Barry, director of marketing; and Frederick L Phelps, manager, Roll Sales Department.

Also of interest to the sales engineer were the round table discussions of the latest developments affecting the textile mill industry. These served to familiarize the men with the newer trends in finishing and prepared them to give sensible analysis and recommendations to each mill.

Representative of subjects covered were the development of new compounds for cotton slasher rolls to the use of silicone rolls in a nonwoven cloth operation.

Stauffer Announces Availability of Methanesulfonyl Chloride

Methanesulfonyl chloride, until recently just a laboratory chemical, is now available in development quantities, according to an announcement by Stauffer Chemical Company. It is a pale yellow liquid boiling at 164° C and freezing at —32° C, and is soluble in most organic solvents and insoluble in water.

The highly reactive nature of the compound suggests its use as an intermediate in the manufacture of dyestuffs and other organic chemicals. Recently published data reveal its use as an intermediate in the flameproofing of cotton, paper and other cellulosic materials.

Methanesulfonyl chloride is said to react with reducing agents, alcohols, phenols, ammonia, amines, active methylene compounds and various other groups.

The Stauffer Company has issued a technical bulletin which details the properties and reactions of the compound. For additional technical information and samples contact: Market Development Department, Stauffer Chemical Co, 380 Madison Avenue, New York 17, NY, or 636 California Street, San Francisco 8, Calif.

TCMA Elects New Officials

At its most recent meeting, held September 19, 1957, the Textile Chemical Manufacturers Association, Inc elected the following officers:

President—John M Jester, Jr, Amalgamated Chemical Corp

Vice president—Joseph B Evans, Dexter Chemical Corp

Secretary-treasurer—John M McChesney, Jr, Leatex Chemical Co.

TCMA, a management group of textile chemical manufacturers, was formed in New York in 1952 for the purpose of maintaining good relationships among the textile chemical manufacturers. Headquarters of the Association is at 55 West 42nd Street, New York, N Y. The organization enjoys membership of companies located in Massachusetts, New York, New Jersey and Pennsylvania.

The main objects of the TCMA are as follows:

A) To promote the common welfare of persons, firms and corporations who are members of this Association and who are engaged in the manufacture in the United States of chemical specialty compounds for the textile industry.

B) To undertake by such means as are proper and lawful to furnish trade information and to promote exchange of information among members for their common good.

C) To cooperate to the fullest extent with the Federal and State governments.

D) To do such other things in the interests of the members and of the trade as may be lawful and proper to promote the best interests of both and to enhance their reputation for reliability.

E) To inform the textile industry and the public, and to keep them reminded by promotion and publicity, of the high principles to which the members of this corporation are pledged, namely:

1) To practice honesty and integrity in all dealings and

2) To maintain the quality claimed for each product manufactured.

The Bylaws further state that any individual, firm, partnership or corporation, or their affiliates, in the United States engaged in the manufacture and sale of chemical specialty compounds for the textile industry, whose principal business is manufacturing, shall be eligible for membership.

The official seal may be used by member companies on stationery and on shipping containers themselves. The use of the seal pledges strict adherence to the objects of the Association.

Meetings are held approximately four times per year at which times roundtable discussions are held for the purpose of promoting the interests of the members as well as the interest of the textile trade. TCMA maintains a surplus raw material exchange service as well as a credit information service.

The Textile Chemical Manufacturers Association is eager to add new companies to its membership and extends an invitation to interested company officials to attend its meetings. Inquiries should be directed to the headquarters in New York.

Western Solvents to Distribute Igepals in Michigan

Western Solvents & Chemicals Co, Detroit, Mich, has been appointed by Antera Chemicals, a Division of General Aniline & Film Corp, to distribute its Igepal nonionic surfactants in eastern Michigan.

Drum stocks of all Igepal CO and CA surfactants will now be available at Western's warehouse and bulk depot, with all orders now being made via Western's trucks. Customers may now order mixed truckloads of Igepal surfactants with other products supplied by Western or combined bulk shipments through the use of compartment tank trucks. At present, Igepal CO-630 and Igepal CA-630 are being stored in bulk at Detroit.

Brown to Import Celersel

M Stanley Brown of New York has been appointed exclusive importer and marketing manager for the United States and Canada for the product and process "Celersel," it is reported.

This process, which is registered and patented in the USA, reportedly involves the use of a chemical additive in connection with the dyeing of wool fibers. It is said to increase the rapidity of dye absorption by wool fibers and to reduce the necessity of extensive heat treatment during wool dyeing.

This method also increases the loftiness, tends to upgrade the wool fiber, and increases the brilliancy or bloom of the dyed wool, it is claimed. In the dyeing of wool-blended fabrics, the method is said to provide better balance in time of dye absorption between the synthetic fibers and the wool.

The product and process has been used fairly extensively in the wool trade in Europe, but only by relatively few woolen mills in the United States.

Metro-Atlantic, Inc, Centredale, RI, has been appointed distributor, and because application of Celersel requires some alterations in dyeing practices, technicians are at the present time abroad to study the European methods of application. These technicians are expected to return to this country shortly, and the product and process will then be offered to the American wool trade.

MAP PLANS FOR TEEN-AGE FABRIC PROMOTION — Joe Bubla of the Fred J Sklenka Co, wholesale fabric distributors' representative, Ruth Kadel, fabrics editor of *Seventeen* Magazine, and George Vorisek of Sklenka review plans for merchandising *Seventeen's* 14th semiannual home sewing promotion at a meeting in the magazine's editorial offices (Oct 16).

The fashion-fabric promotion, aimed at the nation's 4½ million teen-age girls who sew their own clothes, is being conducted for the first time via wholesale fabric distributors across the country, as well as through leading department stores in major U S cities.

Carbide Introduces New Class of Water-soluble Resins

A new class of water-soluble resins that is said to offer a combination of properties ideally suited for a number of textile applications, has been developed by Union Carbide Chemicals Company, Division of Union Carbide Corporation. These new water-soluble resins, trademarked Polyox, are described as exceptionally high-molecular-weight polymers of ethylene oxide, which represent a significant advance in high polymer chemistry.

Carbide is now producing the new resins in a pilot plant unit at South Charleston, W Va, in semicommercial quantities. Substantial commercial production is scheduled for early 1958, and plans are being formulated for a large-scale unit to be completed in 1960.

To date, major emphasis of Carbide's development work with the new resins has been on their use as a warp size for cottons and synthetic yarns. However, the properties of these materials also suggest their use as thickening agents in print paste and backing compounds, as binders in nonwoven fabrics, and in nondurable antistatic agents.

Polyox resins are white granular materials which are said to be completely soluble in water at low concentrations and to form films that are tough and flexible. These films reportedly coat yarns evenly and exhibit excellent adhesive properties. Because of their toughness, they resist abrasion during weaving, and their pliability results in resistance to shedding and cracking, it is claimed.

In addition to having these requisite properties for warp sizing, it is stated, the new resins are noteworthy for their lack of biological oxygen demand (BOD). This property is of particular importance in the light of the growing attention being given the problem of stream pollution, and resultant pressure on textile mills to cut down on mill effluent with appreciable BOD. Moreover, the new materials will be competitive with starch formulas in use today, mill tests indicate.

Polyox resins are said to be readily adaptable to standard mill equipment and procedures. Sizing solutions—generally a 3.75 percent solution—can be stored for several weeks, it is claimed, and these solutions will not deteriorate in any way because of their resistance to microbiological attack. Only one component, the resin, need be added to the bath. It is stated that additives or auxiliaries, such as waxes or softeners, are unnecessary, for the resin itself provides an inherently tough, flexible film on the surface of the sized yarn.

Soft, full hand of cotton fabric woven with Polyox resin-sized warps is checked by George H Law, vice president—research (left), and John A Field, vice president, Union Carbide Chemicals Company.

Weaving efficiencies obtained with Polyox resins are at least the equal of those obtained with starch, Carbide textile chemists state. But they point out that textile mill operators will find that yarns sized with Polyox resins differ greatly from starch-sized yarns. Yarns sized with the new resins, as might be expected from their flexibility, are soft and do not have the characteristic stiffness of starched yarns. As a result of this softness, the yarns are said to retain much of their original elasticity after weaving.

High humidity conditions are unnecessary with the new resins. Carbide suggests that this can mean a considerable saving in costs to maintain such humidity levels as well as greater comfort for workers.

Since the resins are water-soluble, the size can be removed by a cold water rinse or conventional scour. No enzymes are required. It is pointed out that, should any Polyox resin size be left in the fabric, there are no dye-resist spots attributable to the size since it would be removed efficiently by the water in the dyebath. Fabrics woven with warps sized with Polyox resins are said to have a pleasant, soft, full hand as they come from the loom.

Carbide has developed a specific grade of Polyox resins for use in warp sizing. But there are also grades suitable for other textile applications. Either Polyox WSR-35 or WSR-205 can be used as temporary stiffening agents for cloth. In laboratory tests, useful stiffening action was obtained with one percent dry resin add-on.

Since it is claimed that the new polymers have greater thickening power in water solutions than any other commercial material, numerous appications as thickeners and stabilizers in formulations are suggested. Among uses of special interest to the textile industry are thickeners in textile printing pastes, components in rug backing formulations, nondurable antistatic agents, and binders in nonwoven fabrics.

In addition to the three grades mentioned above, two other grades of Polyox resins—WSR-301 and -701—are available. All can be had in eight-ounce sample bottles and in 5-, 25-, and 50-pound containers.

A development price of 75 cents a pound has been established for the warp-size grade of Polyox resins. Present price of the other grades (WSR-35, -205, -301, and -701) is $1.50 per pound.

All of Carbide's laboratory research, design engineering, and production studies indicate the Polyox resins can ultimately be manufactured to permit a selling price range of 35 to 50 cents per pound. The attainment of this price level depends upon the large-volume use of Polyox resins in industrial applications.

Gains Reported for Acrysol P-6

Ready acceptance of its new warp sizing agent, Acrysol P-6, by greige mills weaving filament Dacron fabrics is reported by Rohm & Haas Co, Philadelphia. The product recently became available in commercial quantities. According to R G Thomas, sales manager of the Textile Chemicals Department, Acrysol P-6 has been found by users to provide unusually high loom efficiency and cloth quality at low cost, on a variety of filament Dacron constructions.

• NAMES IN THE NEWS •

Puckett

Daniels

Hugh Puckett has been named director of sales and R W Daniels, assistant director of sales, for the Organic Chemicals Division, American Cyanamid Company.

Mr Puckett has been with Cyanamid since 1937 when he joined the firm as assistant Southern sales manager. Since 1953 he has been manager of the specialty products department of the Organic Chemicals Division.

Mr Daniels has been with Cyanamid since 1936. He was formerly manager of the intermediates department of the Organic Chemicals Division.

Mr Puckett and Mr Daniels will make their headquarters at the Bound Brook, NJ, plant of Cyanamid.

The Kendall Company has announced the appointment of **Horace A Secrist** as director of research for the Company in Boston. Mr Secrist has been director of research of its Kendall Mills Division in Walpole, Mass.

Warner Eustis, who has been Kendall's director of research and vice president for research, will continue his association with the company as vice president.

Ross Whitman, formerly vice president — chemical operations for Rayette, Inc, St Paul, Minn, has joined The Kendall Company. He has been appointed director of research of the Kendall Mills Division and assumed his new duties in late October.

Whitman

Expansion of the Dow Chemical Company's textile development group has been announced by **O R McIntire**, technical director of Dow's textile fibers department at Lee Hall, Va. Zefran, Dow's new textile fiber, will be produced in commercial quantities early next year at a plant more than half completed at Lee Hall.

Harry E New, formerly with American Viscose Corp and Chemstrand Corp, recently joined Dow and now heads up textile yarn and fabric development in textile development, managed by **J F O'Donnell**.

Other additions to the textile development group include **Hal E Brockmann**, formerly with Stonecutter Mills Corp, Spindale, N C and **David M Clark**, formerly of Chatham Mfg Co, Elkin, N C, both of whom are working under Mr New in yarn and fabric development.

Robert L Burgess, formerly with Burlington Industries, Burlington, N C, and **Charles R Sheehan** from Hockmeyer Brothers, Inc, Lowell, Mass, have recently joined the group's dyeing and finishing section.

David C W Kwok, who has been with Dow's textile development group for several years, has received a new assignment as administrative assistant to the group's manager.

The following were elected officers of the Association of Consulting Chemists and Chemical Engineers, Inc, at the Association's Annual Meeting on October 22, 1957: *President*—**Lincoln T Work**; *Vice president*—**Abraham Taub**; *Secretary*— **Charles Davidoff**; *Treasurer*—**Sam Tour.**

Harold W Leitch of Andover was elected president of the board of directors of the Lowell Technological Institute Research Foundation at the annual meeting Oct 21 at the Institute. Other members of the slate chosen for the coming year are **Barnett D Gordon**, president, MKM Hosiery Mills, vice president; **John H Pearson**, Pearson and Pearson, treasurer; **Dorrance H Goodwin**, secretary and executive director of the Foundation.

Voted to the executive committee were **Kenneth E Bell**, chairman; **Chapin A Harris**, professor in charge of the Fibers and Yarns department, LTI; Mr Leitch; **Martin J Lydon**, LTI president; and **Leo Linden**, Warwick Mills.

Eagleson

Leech

B'Hymer

Emery Industries, Inc, Cincinnati, has announced the following moves in its Fatty Acid Sales Department.

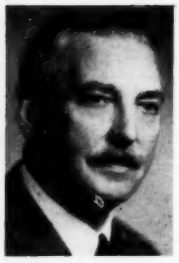
David R Eagleson, who has served as manager of Emery's Chicago office since 1951, has been promoted to assistant sales manager, and **Paul N Leech** has been named to succeed him in the Chicago area.

In his new position, Mr Eagleson will assist in the direction of all phases of sales of Emery's line of fatty acids. In addition to metropolitan Chicago, Mr Leech's new territory includes northern Illinois, Wisconsin, Minnesota, northwestern Indiana and upper Michigan.

Orville W B'Hymer, who has served as assistant to the sales manager since joining Emery in 1947, has been named to the newly created post of customer service manager. He will coordinate customer relations in a move designed to afford more individulized attention and service.

Harold Vernon Morrell has been appointed technical representative for the Eastern Color & Chemical Co, Providence, R I. Until his appointment to his new post, Mr Morrell served as representative for Polymer Industries, Springdale, Conn.

Previous experience in textile applications includes laboratory affiliation with E I duPont de Nemours & Co, Inc, and many textile finishing and dyeing plants.



Holoch

National Aniline Division, Allied Chemical & Dye Corp, has announced the retirement of **Robert F Holoch,** veteran dyestuff salesman associated with its New York sales for more than 36 years; **Frank J Acker,** who has been with the Company's Chicago Branch for the past 38 years; and **Frank W Gainey,** dyestuffs technician and salesman in the New England area, who has been with the Company for 31 years.

Mr Holoch was born and educated in Germany and, after a number of years in business in Offenburg and Stuttgart, emigrated to the United States in 1910. Naturalized as a citizen of this country, he was employed by various industrial concerns in the New York area until 1921, when he accepted a position with National Aniline. Mr Holoch is a member of AATCC and has been active for many years in the affairs of the New York Section. Mr Holoch, who is a past National Chairman of the Steuben Society of America, and his wife will continue to reside at 190 Utter Avenue, Staten Island, N Y. He has two daughters and eight grandchildren.

Mr Acker was born in Brooklyn, N Y and received his early education in the public schools of that city. His technical education stems from Pratt Institute and Brooklyn Polytechnic Insitute. After employment for a number of years, first as a colorist in New York and then in charge of laboratory and demonstrations in Chicago, with the Berlin Aniline Works, United States representative of AGFA, and service with the United States Army in World War I, Mr Acker joined National Aniline's Chicago Branch in 1919. He has continued in the Chicago area until the present time as a dyestuffs technician and salesman. Mr Acker is a member of the Mid-West Section of AATCC. He will continue to reside at 2931 Pine Grove Avenue, Chicago 14, Ill.

Mr Gainey, a native of Lawrence, Mass, received his early education in that city and his technical education at Lowell Technological Institute, where he was graduated with the degree of Bachelor of Textile Chemistry. He was associated for several years with Pacific Mills in Lawrence, and then accepted a position with National Aniline at its Buffalo plant, where he served as superintendent, Dye Application Laboratory until 1923. After a period of employment elsewhere, Mr Gainey returned to National Aniline in 1932. He resumed his association with the Buffalo Plant, holding various technical positions of responsibility until December, 1944, when he transferred to the Company's Boston Branch as a senior salesman. Mr Gainey has continued in the New England area since that time, engaged in sales and service activities in dyestuffs. He has been active in the affairs of AATCC and is a member of the board of trustees of Lowell Technological Institute. Mr Gainey will continue to reside in Lawrence, Mass, at 281 Mt Vernon Street.

Maurice S Letourneau, technical sales representative for the Polyco-Monomer Department, has been transferred to Greenville, SC, from the New England area. In his new assignment, he will cover the Carolinas and Virginia.

Correction

We regret an error which appeared on page 788 of the October 21st issue in which the photos of Messrs William J Roberts and Norman J Abbot were transposed.

OBITUARY

J HILLMAN ZAHN, who retired last year as manager of the Southern office of H W Butterworth & Sons Company, died suddenly in Charlotte, N C, on October 7th. He was 64.

Funeral services were held from the Myers Park Methodist Church in Charlotte on October 9th. Those in attendance from the Butterworth organization were J Ebert Butterworth, president, and Mrs Butterworth; C Eugene Hunter, Jr, manager of the Southern office, and Mrs Hunter; Miss Jennie B Watkins, and James E Butterworth, Jr.

Mr Zahn joined the Butterworth organization in 1910 as a draftsman, and then moved into the sales department. At this time, he was playing professional basketball and in 1921 was selected as basketball coach at Princeton University, a position he held for two years. His 1921 team won the intercollegiate championship.

He rejoined Butterworth in 1923 and with J Ebert Butterworth opened the Southern office. He was located in Greenville, S C, until 1926 when the office was moved to Charlotte. He became manager of the office in 1936.

Mr Zahn received his education at the Friends School in Philadelphia, and the Engineering School of the Benjamin Franklin Institute.

He is survived by his widow, the former Edna Conahey. The family requested that any remembrances be sent to The Living Memorial Fund of the Charlotte Memorial Hospital.

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